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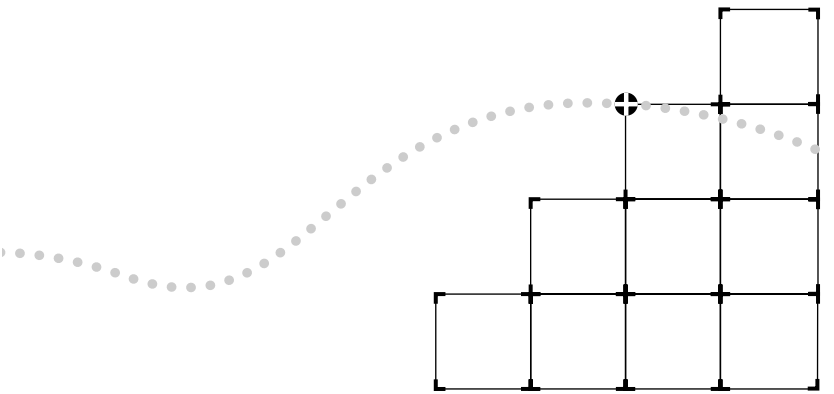
To ensure the very best 3Com service and support, take the time to complete the product registration card.

Any defective 3Com adapter will be repaired or replaced, at 3Com's option, for as long as the adapter resides in its original IBM® Personal Computer, Personal System/2®, or compatible computer (driver software is covered by the standard 90-day limited software warranty).



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  Australia

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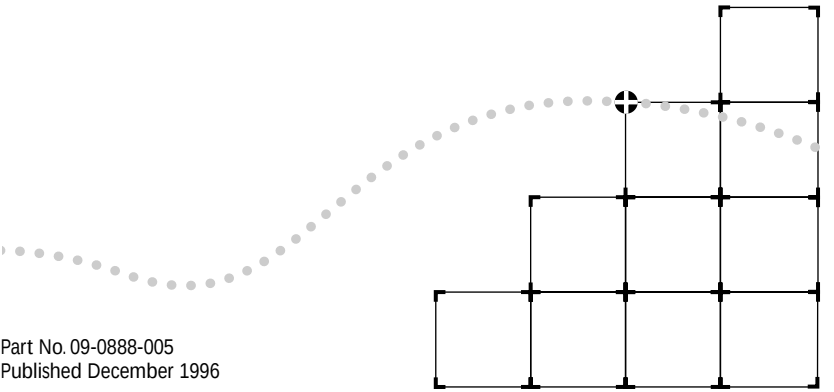
ETHERLINK® XL PCI NETWORK INTERFACE CARDS USER GUIDE

Members of the 3Com EtherLink family of network interface cards



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ABOUT THIS GUIDE

This guide describes how to install, configure, and troubleshoot the 3Com® EtherLink® XL Parallel Tasking® PCI Bus Master network interface cards (NICS).

This guide describes both the 3C900-TPO and the 3C900-COMBO NICs. Both NICs are called the 3C900 NIC in this guide and differences are noted in text.

If the information in the README.TXT file on the EtherDisk® *diskette shipped with your product differs from the information in this guide, follow the instructions in the README.TXT file.*

How to Use This Guide

Go to the following chapters for more detailed information.

If you are looking for:	Turn to:
Features and PC requirements	Chapter 1
Installation and cabling	Chapter 2
Installing the NetWare network driver	Chapter 3
Installing the NDIS 2.01 and NDIS 3 network drivers	Chapter 4
Troubleshooting	Chapter 5
Changing configuration settings	Chapter 6
Specifications, connector pin assignments, cable requirements, and RJ-45 Pin assignments	Appendix A
Technical support	Appendix B

Conventions

Table 1 and Table 2 list text and icon conventions that are used throughout this guide:

Table 1 Text Conventions

Convention	Description
Text represented as `screen display`	`This typeface` is used to represent displays that appear on your terminal screen, for example: `Login:`
Text represented as **`commands`**	**`This typeface`** is used to represent commands that you enter, for example: **`a: install [Enter]`** [Enter] means to press the Return key.
Italics	*Italics* are used to denote *new terms* or *emphasis*.

Table 2 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, system damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

1 INTRODUCTION

The 3C900 network interface cards (NICS) connect your PCI-compliant PC to an Ethernet network.

This chapter describes the 3C900 NIC features and PC and server system requirements.

Features

The 3C900 NIC has the following features:

- Dynamic Access™ features to optimize network performance.
- Interactive Access technology to minimize CPU utilization.
- PACE™ drivers that enable prioritization of applications such as video.
- Distributed RMON agents (dRMON).
- Parallel Tasking architecture for high throughput and low processor utilization.
- Full-duplex 10 Mbps support.
- Automatic selection of media type.
- 32-bit bus master design.
- Microsoft® Windows® 95 automatically senses the presence of the 3C900 NIC and loads the network driver from the 3Com *EtherDisk* diskette.
- Windows-based diagnostics program for Windows 95 and Windows NT® that provides a graphical interface to 3Com's diagnostic and configuration tools.

- AutoLink™ installation software, which automatically installs all Novell® NetWare® DOS ODI client software into your operating system.
- Status LED.
- Single shielded RJ-45 connector (3C900-TPO).
- Single shielded RJ-45 connector, AUI socket, and BNC connector (3C900-COMBO).
- Support for Category 3, 4, or 5 UTP cabling for 10BASE-T Ethernet networks.
- Remote network management support.

Dynamic Access

Dynamic Access is a features set that optimizes network performance. Dynamic Access features include: PACE Interactive Access technology, dRMON support, Efficient Multicast Control, PACE real-time and multimedia application support.

PACE Support

PACE offers the ability to prioritize multimedia and real-time data. You must have the 3C900 NIC and the PACE-compliant application installed. This feature is operational only with a PACE-enabled switch such as the LinkBuilder 1000.

PACE prioritization increases the efficiency of bandwidth utilization and allows data and time-sensitive voice, video or data to share the same physical network infrastructure.

Distributed RMON

The 3C900 NIC collects remote management information on command and sends it to supported network management applications to provide network management in both switched and Fast Ethernet networks.

Automatic Selection of the Media Type

While the 3Com network driver installs, it automatically selects the media type (TP, AUI, or coax) based on the type of cable connected. If you change the cable type, you can either reinstall the driver for it to auto-detect the cable type or change the configuration as described in Chapter 6.

If the driver cannot detect which cable is connected or whether a cable is connected, the Auto Select Media Type function for the 3C900-COMBO uses the on-board transceiver as the default with thin Ethernet cable.

Remote NIC Management

3Com's Transcend PC Link SmartAgent driver agents, which need 6 KB of memory, provide network management of the 3C900 NIC in the PC. Driver agents for this NIC are provided on a 3C900 *EtherDisk* diskette. You can get the latest driver agents from 3Com's Transcend PC Link SmartAgent, or from 3Com's bulletin board service (BBS). See Appendix B.

PC and Server Requirements

Your PC or server must meet the following requirements:

- 80386, 80486, Pentium, Power PC, or Alpha-based PC or server
- Available PCI bus master expansion slot
- 640K of memory (minimum)

Make sure you are running the latest BIOS for your PC or server.

Proceed to Chapter 2 to install the 3C900 NIC in your PC or server and connect it to the network.

2 INSTALLING THE 3C900 NIC

This chapter describes how to install the 3C900 NIC in your PC or server and connect it to the network.

Before You Begin

Before you begin, make sure you have these items:

- EtherLink XL PCI NIC
- *3Com EtherLink XL PCI Network Interface Cards User Guide*
- 3C900 *EtherDisk* diskettes

Inform your network supplier and package delivery carrier of any missing or damaged items. If you need to return the NIC to 3Com, you must pack it in the original (or equivalent) packing material, or the warranty will be voided.

Installing the NIC

The following instructions apply to installing NICs in most PCs. Refer to the manual that accompanied your PC for detailed instructions on installing boards in your PC.

WARNING: *The NIC board is installed in a PC or server that operates with voltages that can be lethal. Before you remove the cover of your PC or server, you must observe the following steps to protect yourself and prevent damage to the system's components.*

To install the 3C900 NIC, follow these steps:

1. Turn off the PC or server and unplug the unit from its power source.
2. Remove any jewelry from your hands and wrists.

3 Make sure to use only insulated or nonconducting tools.

4 Remove the 3C900 NIC from its container.

5 Check the 3C900 NIC for any visible signs of damage. The 3C900-TPO NIC is shown in Figure 2-1.

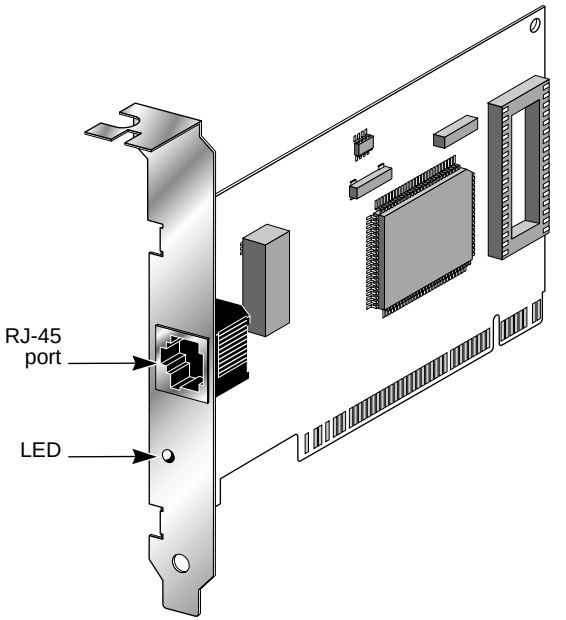


Figure 2-1 3C900-TPO NIC

The 3C900-TPO NIC occupies a PCI (2.0 or 2.1) slot in your PC and has a single RJ-45 port for connecting unshielded twisted pair (UTP) cable.

The 3C900-COMBO NIC is shown in Figure 2-2.

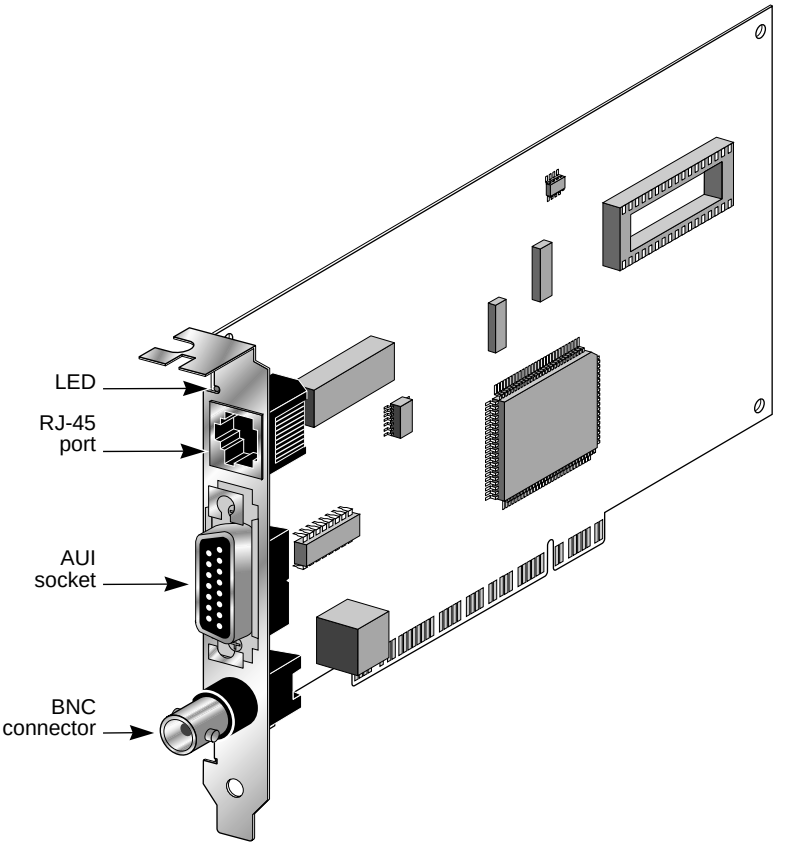


Figure 2-2 3C900-COMBO NIC

The 3C900-COMBO NIC occupies a PCI (2.0 or 2.1) slot in your PC. The NIC has an RJ-45 port, AUI socket, and BNC connector for connecting to UTP (RJ-45), an external transceiver (AUI), and thin coax (BNC).

6 After you unpack the NIC, complete the Product Registration Card at the back of this guide and return it to 3Com. Or call 1-800-NET-3Com for immediate registration.

7 Remove the PC cover, as shown in Figure 2-3.

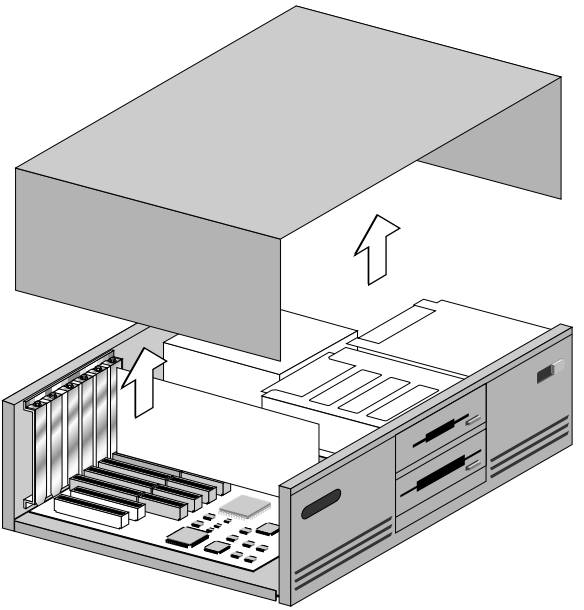


Figure 2-3 Removing the Cover

8 Choose an empty PCI slot, as shown in Figure 2-4.

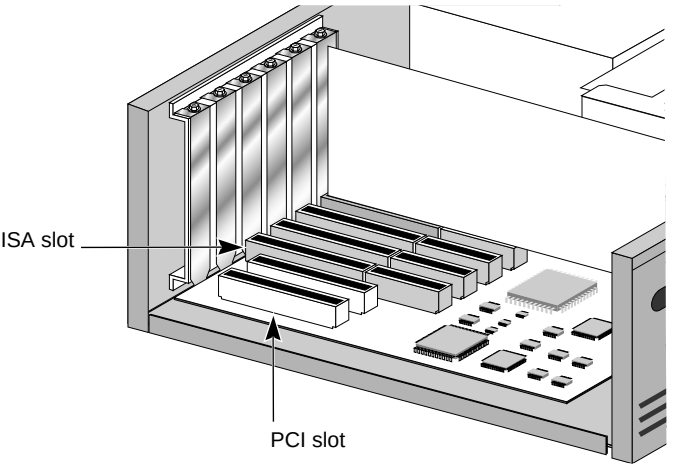


Figure 2-4 Selecting a PCI Slot

If you do not know how to identify a PCI slot, check your PC documentation or ask your system administrator.

9 Unscrew the screw holding the PCI slot's backplate and remove it, as shown in Figure 2-5.

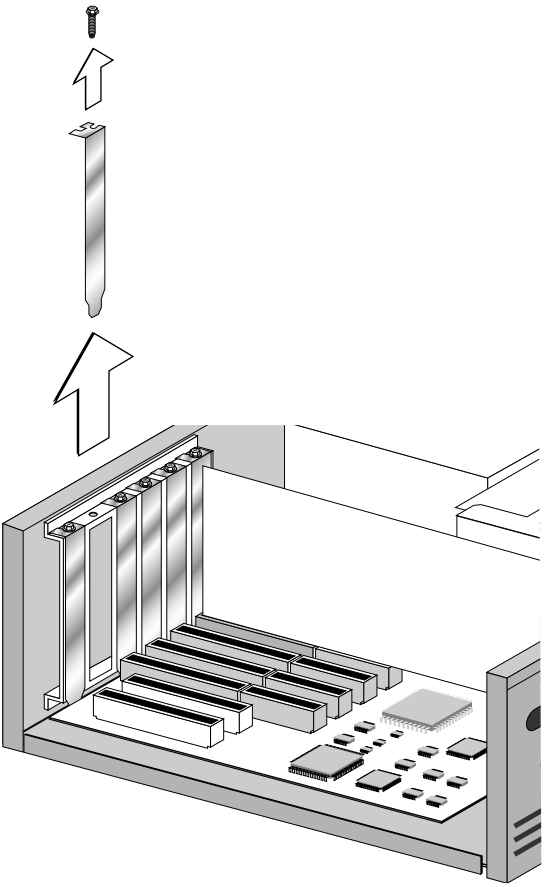


Figure 2-5 Removing the Screw and Backplate

10 Insert the 3C900-TPO NIC into an empty PCI slot, shown in Figure 2-6.

Make sure the board is firmly seated in the slot.

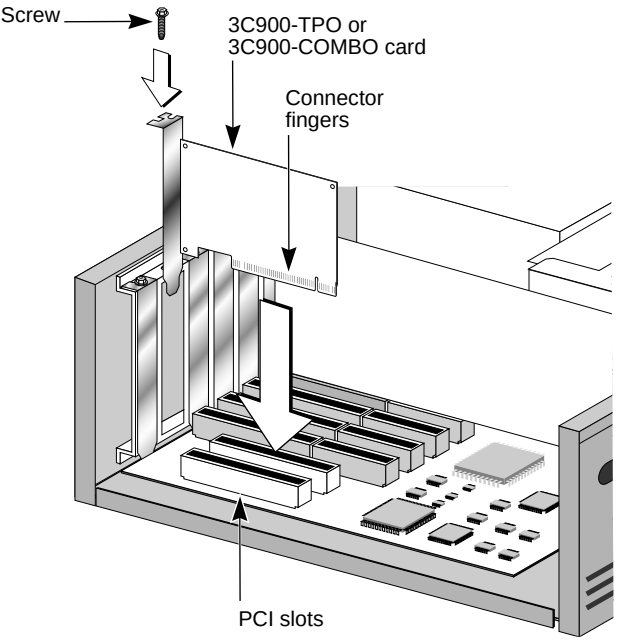


Figure 2-6 Inserting the NIC

11 Secure it with the screw you removed earlier.

Both NICs are installed the same way.

12 Replace the PC cover and reconnect all previously connected cables.

13 Turn on the power to the PC.

14 Proceed to the next section, "Connecting to the Network."

Connecting to the Network

This section describes how to connect the 3C900-TPO and 3C900-COMBO NICs to the network cable. You must connect the NIC to the network before loading the network driver.

10BASE2 or 10BASE5 coaxial cable, or 10BASE-T twisted-pair cable is used to connect the NIC in the computer to the network. Table 2-1 provides cabling information and Appendix A describes cabling requirements.

Table 2-1 3C900 NIC Cable and Connector Specifications

NIC Type	Cable Specification	Connector Types
3C900-COMBO	10BASE-T	RJ-45
	Thin coax (10BASE2)	BNC
	Thick coax (10BASE5)	AUI
3C900-TPO	10BASE-T	RJ-45

Connecting the 3C900-TPO NIC to the Network

To connect the 3C900-TPO NIC to the network cable, follow these steps:

1. Connect the network cable to the RJ-45 port on the 3C900 NIC, shown in Figure 2-1.

2. Connect the other end of the network cable to a 10BASE-T network port.

The 3C900 NIC is installed. The next step is to install the network driver. See "Network Driver Installation Options" at the end of this chapter for information on network driver installation options.

Connecting the 3C900-COMBO NIC to the Network

You can connect the 3C900-COMBO NIC to the network using the RJ-45 port, AUI socket, or BNC connector.

Using the RJ-45 Port

To connect the 3C900 NIC to the network cable using the RJ-45 connector, follow these steps:

1. Connect the network cable to the RJ-45 port on the 3C900-COMBO NIC, shown in Figure 2-2.

2. Connect the other end of the network cable to a 10BASE-T network port.

The 3C900-COMBO NIC is installed. The next step is to install the network driver. See the end of this chapter for information on network driver installation options.

Using the BNC Connector

The 3C900-COMBO NIC is factory-set to use the on-board transceiver as the default with thin Ethernet cable. The BNC connector is used for thin Ethernet cable.

1. Connect the T-connector to the NIC's BNC connector, as shown in Figure 2-7.

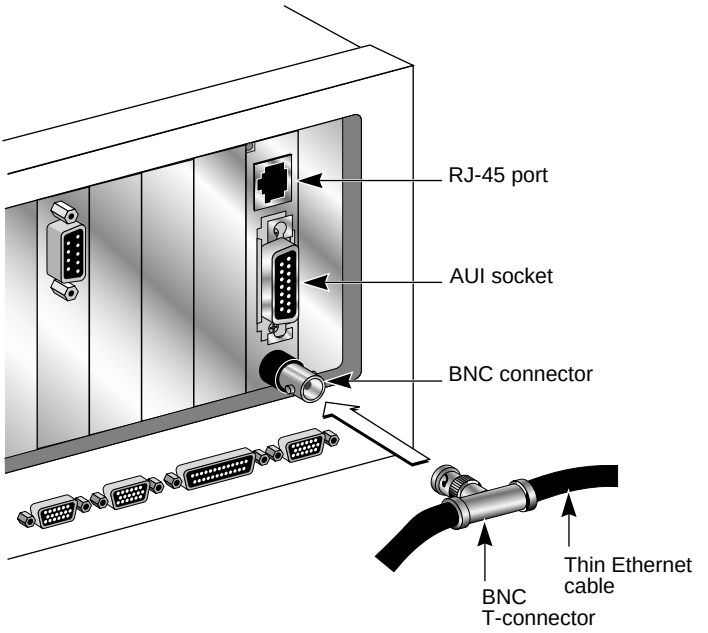


Figure 2-7 Connecting Thin Ethernet Cable with the BNC Connector

2 Align the BNC T-connector slots with the pegs on the NIC's BNC connector.

The T-connector does not ship with the 3C900-COMBO NIC.

3 Push the T-connector in and twist it clockwise until it stops.

4 Connect the network cable to the network.

The 3C900-COMBO NIC is installed. The next step is to install the network driver. See the end of this chapter for information on network driver installation options.

Using the AUI Socket for an External Transceiver

You can connect an AUI cable from an external transceiver to the AUI socket on the NIC to convert between an AUI Ethernet connection and other types of cabling, such as fiber-optic, coaxial, or UTP. Proceed as follows:

1 Locate the NIC's AUI port and move the slide latch to the open position, as shown in Figure 2-8.

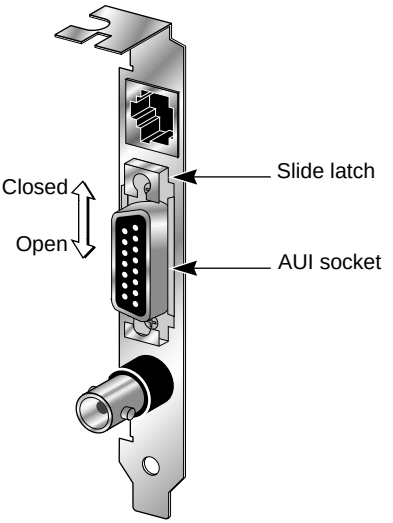


Figure 2-8 Slide Latch

2 Connect the AUI connector from the transceiver cable to the AUI socket on the NIC, as shown in Figure 2-9.

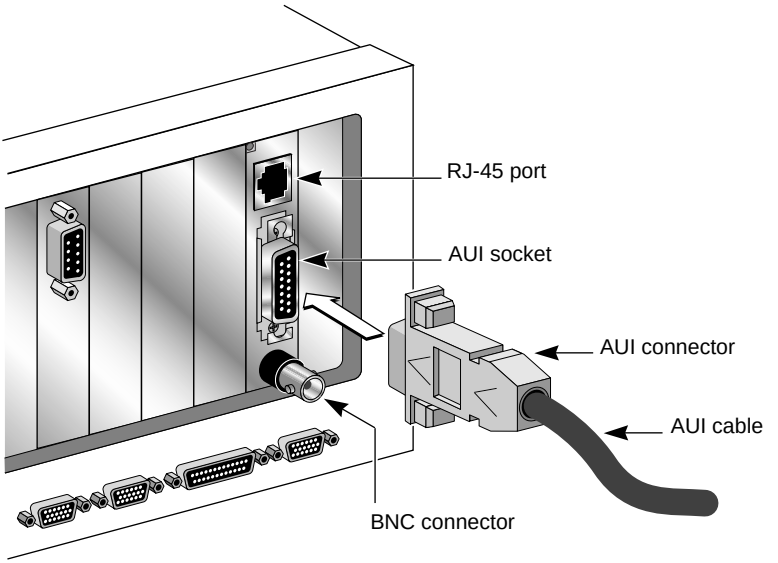


Figure 2-9 Connecting the AUI Cable

3 Move the slide latch to the closed position to lock the cable in place.

4 Connect the other end of the AUI cable to the external transceiver.

The 3C900-COMBO NIC is installed. The next step is to install the network driver. See the next section for information on network driver installation options.

Network Driver Installation Options

The next step is to load the network driver that allows your PC or server to connect to the network. To make installation easier, ask your system administrator which network driver you should install and which operating system is running on your PC or server.

If you need a NetWare network driver, go to Chapter 3. If you need any other network driver, go to Chapter 4, as shown in Figure 2-10.

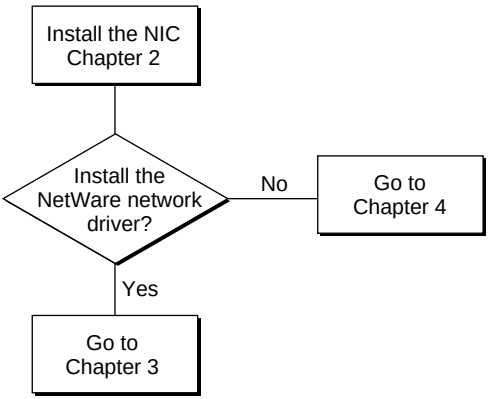


Figure 2-10 Network Driver Installation Options

The network drivers provided on the *EtherDisk* diskettes include:

- Novell NetWare 3.x and 4.x (client and server) (refer to Chapter 3)

  The NetWare driver installation instructions describe how to install the NetWare network client and server drivers in PCs that use Windows 95, Windows for Workgoups, and NetWare operating systems.

  You can use the 3Com AutoLink program to install the NetWare client driver for PCs running DOS or Windows 3.x.

  Instructions for the new NetWare 32-bit driver are provided in the client32.txt file on the *EtherDisk* diskette.

- NDIS 3 network driver (Chapter 4)

  The NDIS 3 driver installation instructions describe how to install the NDIS 3 driver in PCs that use Windows 95, Windows NT, and Windows for Workgoups operating systems.

- NDIS 2.01 network driver (Chapter 4)

  The NDIS 2.01 driver installation instructions describe how to install the NDIS 2 driver in PCs that use Windows 95, Windows for Workgoups, and OS/2 operating systems. Use the 3Com DOS Configuration and Diagnostic program to install the NDIS 2 network driver for PCs that use DOS or Windows 3.x.

  Instructions for installing these drivers are provided in text files on the *EtherDisk* diskettes for the other NDIS 2 network operating systems including:

  - Banyan® VINES® client and server
  - Microsoft LAN Manager
  - SCO® UNIX®
  - IBM LAN Server
  - Artisoft® LANtastic®
  - DEC® PATHWORKS®

  Use your word processing program to display and print the text files for these network operating systems.

3 INSTALLING THE NETWARE NETWORK DRIVER

This chapter describes how to install the NetWare network client and server drivers from the *EtherDisk* diskettes to your PC or server. To install any other network driver, see Chapter 4.

You can install the NetWare network client and server drivers in PCs that use Windows 95, Windows for Workgoups, and NetWare operating systems.

The 3Com AutoLink program installs the NetWare client driver in PCs that use DOS, Windows 3.x, or Windows for Workgroups.

Instructions for the new NetWare 32-bit driver are provided at the end of this chapter.

You can obtain the latest network drivers on 3Com's World Wide Web site. To access the Web site, enter the 3Com URL address into your Internet browser:

`http://www.3Com.com/`

The drivers are in the Customer Support area. You can also obtain the latest drivers on the 3Com bulletin board. Refer to Appendix B for information on how to access the 3Com BBS.

If you are already using a network connection on your PC, some of the following instructions may not apply or may produce different results. Ask your network administrator for instructions.

Before You Begin Installation

Obtain the following information from your system administrator:

- Name of the NetWare driver to install (client, server, or NetWare 32-bit driver)
- PC Operating system on your PC or server
  - Windows 95
  - Windows for Workgroups
  - Windows 3.x
  - OS/2
  - DOS
- NetWare file server name
- Network account user name and password

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

Go to the section for your network driver and PC operating system in this chapter for instructions that describe how to install the NetWare driver on your PC or server.

Installing the Novell NetWare Client Driver

In a Novell NetWare environment, the network client driver is installed on a PC running one of these operating systems:

- Windows 95
- Windows for Workgroups
- Windows 3.x
- DOS
- OS/2
- Client 32

Proceed to the section for your PC operating system for driver installation instructions.

Windows 95

This section describes how to install the driver if your PC is running Windows 95 and you are connecting to a NetWare network. This driver supports 16-bit applications. You need the Windows 95 files to complete installation. To install the driver, follow these steps:

1. Gather the information described In "Before You Begin" at the beginning of this chapter.

2. In addition, obtain the following information from your system administrator:
   - Your computer name
   - Workgroup name
   - Preferred server
   - First network drive

3. Install the 3C900 NIC and cable it to the network, as described in Chapter 2.

4. Turn the PC on and start Windows 95.

   The New Hardware Found dialog box appears followed by the Insert Disk dialog box.

5. Insert the appropriate *EtherDisk* diskette in drive A and click *OK*.

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

Windows 95 copies the needed files from the *EtherDisk* diskette and prompts you for the Windows 95 software, your computer name, and workgroup name. Follow the instructions provided.

After the files are copied, a dialog box appears asking if you want to reboot your PC. Click *No*.

6. Double-click the *My Computer* icon.

7. Double-click the *Control Panel* icon.

8. Double-click the *Network* icon.

   The Network dialog box appears.

   The default network setup for Windows 95 includes the following five components:

   - Client for Microsoft Network
   - Client for NetWare Networks
   - 3Com EtherLink XL PCI Bus Master NIC
   - IPX/SPX Compatible Protocol
   - NetBEUI

9. Click on *Client for Microsoft Network* and *NetBEUI* and press *Remove* to remove Client for Microsoft Network and NetBEUI.

   The network components should now include:

   - Client for NetWare Networks
   - 3Com EtherLink XL PCI Bus Master NIC
   - IPX/SPX Compatible Protocol

   If any of these components are missing, you can add them by pressing the *Add* button.

10. Click *Client for NetWare Networks*.

11. Click the *Properties* button.

12. Under the General tab, set your Preferred Server and the First Network Drive.

13. Click *OK*.

14. Set the Primary Network Logon to Client for NetWare Networks.

15 Click *OK*.

16 When prompted, remove the *EtherDisk* diskette, reboot the PC, and follow the steps in the next section.

The driver installation is complete.

Confirming Successful Installation

After you reboot, complete the following procedure to confirm that the 3C900 NIC is properly installed in a PC running Windows 95:

1 Double-click the *My Computer* icon.

2 Double-click the *Control Panel* icon.

3 Double-click the *System* icon.

The System Properties box appears, detailing your PC setup.

4 Click the *Device Manager* tab.

A list of devices appears, arranged by type.

5 Double-click the *Network Adapters* icon.

The name of the installed 3C900 NIC appears:

```
3Com EtherLink XL PCI Bus Master NIC
```

This confirms the 3C900 NICs successful installation.

You can double-click the 3C900 NIC name to display a description of the 3C900 NIC and its current status.

The dialog box confirms that the 3C900 NIC is working properly. If you have a problem, go to Chapter 6.

6 Click the *Cancel* button to leave each dialog box and return to the Control Panel.

Installation is complete and verified.

Windows for Workgroups

This section describes how to install the driver if your PC runs Windows for Workgroups and you are using the Microsoft Windows Network in combination with Novell NetWare. If you want to install NetWare Shell support only, go to the next section. For more information, ask your system administrator.

1. Install the 3C900 NIC and cable it to the network as described in Chapter 2.
2. Gather the information described In "Before You Begin Installation" at the beginning of this chapter.
3. Using Windows for Workgroups, in the main window and the Control Panel, click the *Network* icon.
4. Set up the network for Microsoft and Novell (3.x or 4.x).
   a. Select *Install Microsoft Windows Network and Other Network*.
   b. Select *Novell*.
5. When prompted to choose the Novell NetWare drivers, select the recommended driver.
6. When the Network Setup window appears, select the *Drivers* button.
7. When the Network Drivers window appears, choose *Add Adapter* and select *Unlisted* or *Updated Network Adapter*.
8. Click *OK*.
9. When the Install Driver dialog box appears, insert the appropriate *EtherDisk* diskette in the floppy disk drive.

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

10 At the command line, type in the following drive and path and press *OK*:

```
a:\wfw311
```

This loads the driver.

11 Follow the instructions that appear on the screen to install the proper support files from your WFW support disk or NetWare diskettes.

12 Reboot the PC.

The driver installation is complete.

NetWare Shell Support

If you are installing only NetWare shell support for Windows for Workgroups, complete the following steps. For more information, ask your system administrator.

1 Using Windows for Workgroups, in the main window and the Control Panel, click the *Network* icon.

2 Click the *Network* button and select *Install Windows* support for the following network only, for example:

```
Novell NetWare (Workstation shell 3.x or 4.x)
```

3 Click *OK*.

4 Click *OK* again in the Network Setup window that appears, and follow the prompts.

It may be necessary to use your Novell or Windows for Workgroups network support diskettes during the installation.

5 Reboot the PC when prompted.

The driver installation is complete.

Using the AutoLink Software

This section describes how to install the driver for a PC running DOS, Windows 3.x, or Windows for Workgroups. AutoLink software program automatically installs the NetWare DOS ODI client software, including the driver, and modifies the CONFIG.SYS and AUTOEXEC.BAT files.

Gather the information described In "Before You Begin Installation" at the beginning of this chapter. In addition, to use the AutoLink program, your PC must meet these requirements:

- Use Novell NetWare 3.12 or 4.10 network operating system
- Have *only one* 3C900 NIC installed
- Be intended for use as a NetWare client

To use the AutoLink program to install the driver, follow these steps:

1. Make sure the 3C900 NIC is installed and cabled to the network as described in Chapter 2.

2. Boot the PC under DOS.

3. Insert the appropriate *EtherDisk* diskette in drive A and type the following at the DOS prompt:

   `a:\autolink [Enter]`

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

4. The first time you use the *EtherDisk* diskette, the 3Com software license appears. To accept its terms, type **Y**. (To view all the license text, press [F1].)

   Several messages appear while the AutoLink program is running. A final message indicates successful installation.

If problems occur only *when the AutoLink program runs, view or print the AUTOLINK.LOG file (located on the C:\ directory) to see what the problem may be.*

- To display the file, type the following:

  `type autolink.log | more [Enter]`

- To print the file, type the following:

  `print autolink.log [Enter]`

5. Select DOS, Windows 3.x, or Windows for Workgroups.

6. When prompted, remove the *EtherDisk* diskette and reboot the PC.

   AutoLink installation is complete and you can log on to the network.

   For Windows 3.x, after connecting to the network, be sure to run WSINSTALL for full Windows support. (Ask your system administrator for the location of this Novell installation utility.)

OS/2

This section describes how to install the driver for an OS/2 client. OS/2 must be installed on the PC.

1. Download the latest version of the Novell NetWare Requester from Novell's ftp site (ftp.novell.com) or NetWire.

2. Insert the first NetWare Requester diskette in the floppy drive.

3. Using the Drives icon, bring up the drive for the NetWare Requester Install diskette.

4. Bring up the installation bar and single-click *Installation*.

5. Double-click *INSTALL.EXE*.

6. Follow the on-line instructions to install the NetWare Requester on the PC.

7 Type the name of the target directory where the Requester files will be copied.

8 Choose the ODI LAN driver from the list that appears.

9 Click the "v" in the information bar.

You will be asked to insert the diskette labeled WSDRV_1, or the diskette containing the third-party ODI driver.

10 Insert the WSDRV_1 diskette.

11 Select the 3Com driver from the list of ODI drivers.

12 Complete the installation for the NetWare Requester.

13 Install the 3C900 NIC and cable it to the network.

14 Exit to DOS from OS/2.

15 Type:

```
boot /dos [Enter]
```

16 Insert the appropriate *EtherDisk* diskette into drive A and at the DOS prompt, type:

```
a:\install [Enter]
```

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

17 On the main menu, select *Driver Installation and Update* and press [Enter].

18 On the Network Drivers screen, select *Install Novell NetWare Drivers* and press [Enter].

19 On the Novell NetWare Drivers screen, select *Copy OS/2 ODI Driver* and press [Enter].

20 Copy the driver to the NETWARE directory on drive C and press [Enter].

Otherwise, type another drive letter and directory name (for example, d:\odidriver), and press [Enter].

21 Reboot the PC.

The driver installation is complete.

Installing the Novell NetWare Server Driver

In a Novell NetWare environment, this driver is installed on a *server* computer running one of these NetWare versions:

- NetWare 3.12
- NetWare 4.10

The \NETWARE subdirectory on the *EtherDisk* diskette contains the driver (3C90X.LAN file) and NetWare Loadable Modules (NLMs) needed for NetWare 3.12 or 4.10. If your server is using NetWare 4.10, you should also install the NetWare 32-bit server driver.

NetWare 3.12

This section describes how to install the ODI server driver from the appropriate *EtherDisk* diskette on a NetWare 3.12 server.

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

The NetWare installation program does not have driver import capability. The NetWare server software must already be installed but not yet running.

To install this server driver into a NetWare 3.12 server, follow these steps:

1. Copy all of the files from the \NWSERVER (except for MSM.NLM) subdirectory on the appropriate *EtherDisk* diskette to the server hard disk.

2. Boot the server and launch the Installer program.

3. Edit the AUTOEXEC.NCF file to add the following line (assuming the server start directory is C:\SERVER, where the LAN drivers and NLM files were copied):

   ```
   load c:\server\3C90x.lan port=<portnumber>
   ```

   The port number variable is the hexadecimal port number of the PCI NIC. This address can be obtained from the Configuration and Diagnostic Program.

Multiple NICs

To support more than one NIC in a server, change the AUTOEXEC.NCF file to the following format:

```
load C:\SERVER\3C90X.LAN PORT=<port1>
NAME=<name1> FRAME=<frametype>
load C:\SERVER\3C90X.LAN PORT=<port2>
NAME=<name2> FRAME=<frametype>
```

The 3C900 NIC's PCI port addresses are port1 and port2 and name1 and name2 are user-specified names that you assign to distinguish the multiple NICs.

The FRAME parameter is optional. The default frame type is Ethernet_802.2. If you want the ODI server driver to support more than one frame type, then both the unique NAME= and FRAME= parameters must be paired on each load driver line. The valid frame types are Ethernet_802.2, Ethernet_802.3, Ethernet_II, and Ethernet_SNAP.

The protocol(s) must be bound to the specific driver configuration using the user-assigned unique names. The following example shows how this can be done:

```
load C:\SERVER\3C90X.LAN PORT=1000
FRAME=Ethernet_802.3 NAME=ADPONE
load C:\SERVER\3C90X.LAN PORT=2000
FRAME=Ethernet_II     NAME=ADPTWO
bind IPX to ADPONE
bind IPX to ADPTWO
```

The examples used may require other parameters to work properly. Consult the appropriate Novell NetWare manuals for details.

NetWare 4.10

This section describes how to install the ODI server driver into a NetWare version 4.10 server. You can install this driver by using the program to copy the driver to the server's hard disk, and then manually loading the driver. You can also import this driver when installing the NetWare 4.10 server software.

To import the server driver into a NetWare 4.10 server, follow these steps:

1. Install the server software.
2. When the NIC selection menu appears, place the appropriate *EtherDisk* diskette into the floppy drive.

Before you install the NetWare network driver, make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

3. Press [Insert] to add a driver externally.
4. Press [F3] to change the path.

5 When you see the A:\ prompt, type:

nwserver [Enter]

The installation program gathers the files and prompts you for a NIC selection.

6 Select the *3Com EtherLink XL PCI Bus Master NIC*.

7 Press [Enter] to continue the server installation.

8 Copy the .NLM (except for MSM31X.NLM) files from the \NWSERVER subdirectory of the appropriate *EtherDisk to the* same location as the server driver.

9 Install the NetWare 32-bit driver in the next section.

Installing the NetWare 32-bit Driver

You can install the NetWare 32-bit driver for clients and servers. Refer to the client32.txt file on the *EtherDisk* diskette for instructions on how to install this driver.

4 INSTALLING THE NDIS NETWORK DRIVER

The Network Driver Interface Specification (NDIS) software specification was developed by Microsoft and 3Com. It is used as a specification for Non-NetWare network operating environments.

This chapter describes how to install the NDIS network drivers for both NDIS 2.01 and NDIS 3.x environments. Ask your system administrator which NDIS network driver to install.

The NDIS 3 driver installation instructions describe how to install the NDIS 3 driver for PCs that use Windows 95, Windows NT, and Windows for Workgoups operating systems.

The NDIS 2.01 network driver installation instructions describe how to install the NDIS 2 driver for PCs that use Windows 95, Windows for Workgoups, and OS/2 operating systems. You can use the 3Com DOS Configuration and Diagnostic program to install the NDIS 2 network driver for PCs that use DOS or Windows 3.x.

Instructions on how to install the drivers for the other NDIS 2 network operating systems are contained on the *EtherDisk* diskettes including:

- Banyan VINES client and server
- Microsoft LAN Manager
- SCO UNIX
- IBM LAN Server
- Artisoft LANtastic
- DEC PATHWORKS

Use a text editor or word processor to display and print the text files for these network operating systems.

You can obtain the latest network drivers on 3Com's World Wide Web site. To access the Web site, enter the 3Com URL address into your Internet browser:

http://www.3Com.com/

The drivers are in the Customer Support area. You can also obtain the latest drivers on the 3Com bulletin board (BBS). Refer to Appendix B for information on how to access the 3Com BBS.

Before You Begin

Ask your system administrator for the following information:

- NDIS driver version for your PC (NDIS 3 or NDIS 2)
- Identify which PC operating system is on your PC
  - Windows 95
  - Windows NT
  - Windows for Workgroups
  - Windows 3.x
  - DOS
  - OS/2
- NDIS file server name
- Network account user name and password

Go to the section for your PC operating system and NDIS driver version for the network driver installation instructions.

Before you install the NDIS network driver, make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

Installing the NDIS 3.x Driver

This section describes how to install the NDIS 3.x driver using one of these programs:

- Windows 95
- Windows NT
- Windows for Workgroups

Windows 95

This section describes how to install the NDIS 3 driver for PCs running Windows 95. You will need the Windows 95 software files to complete installation.

1 Install the 3C900 NIC and cable it to the network as described in Chapter 2.

2 Turn the PC on and start Windows 95.

A message appears saying that new hardware has been found. If this message does not appear, see Chapter 5.

The New Hardware Found dialog box appears followed by the Insert Disk dialog box.

3 Insert the appropriate *EtherDisk* diskette in drive A and click *OK*.

Make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

Windows 95 copies the needed files from the *EtherDisk* diskette and prompts you for the Windows 95 software, your PC name, and workgroup name. Follow the instructions provided.

4 When prompted, remove the *EtherDisk* diskette, reboot the PC, and follow the steps in the next section.

The driver installation is complete.

Confirming Successful NIC Installation

To confirm that the 3C900 NIC is properly installed in your PC running Windows 95, follow these steps:

1. Double-click the *My Computer* icon, double-click the *Control Panel* icon, then double-click the *System* icon.
2. On the System Properties box, click the *Device Manager* tab.

   A list of devices appears, arranged by type.
3. Double-click the *Network Adapters* tab.

   The 3C900 NIC's name appears:

   `3Com EtherLink XL PCI Bus Master Adapter`

   This confirms the 3C900 NIC's installation.
4. Double-click the *3Com EtherLink XL PCI Bus Master Adapter* to display a description of the 3C900 NIC and its current status.

   The dialog box confirms that the 3C900 NIC is working properly.
5. Click the *Cancel* button to leave each dialog box and return to the Control panel.

Peer-to-Peer Networking

To use peer to peer networking, you must have the Microsoft Network Client and NetBEUI in your network configuration.To configure Windows 95 for peer-to-peer networking, follow these steps:

1. Install the 3C900 NIC and configure the network as described in the previous Windows 95 section.
2. Add file and print sharing capability to your network configuration.

   See your Windows 95 documentation for instructions on how to add file and print sharing.
3. When Windows 95 prompts you to shut down and reboot the PC, click the Yes button.

   After Windows 95 reboots, you are ready to share resources.

Windows NT

Follow these steps to install your 3C900 NIC in a PC running Windows NT.

1. Start Windows NT.
2. In the Control panel, double-click the Network icon.
3. In the Network Settings window, highlight the existing 3Com driver in the Installed Adapters group.
4. Click *Remove*.
5. Click *Yes* in the Network Settings dialog box.
6. In the Network Settings window, click *Add Adapter*.
7. In the Add Network Adapter window, press and hold the down arrow until Other Requires disk from manufacturer appears.
8. Click *Continue*.
9. Insert the appropriate *EtherDisk* diskette into drive A and type:

   `a: [Enter]`

Make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

10. In the Select OEM Option box, select 3Com EtherLink XL NIC (3C900).
11. Click *OK*.

    The welcome screen appears. Continue installation.
12. In the Network Settings window, click *OK*.

    If you are prompted for network information, contact your system administrator for information unique to your network.

13 In the Network Settings Change window, click *Restart Now* to restart your PC.

The driver installation is complete.

Running Windows NT on a Non-DOS Processor

If your PC cannot run the DOS-based Configuration and Diagnostic program you may need to set the duplex level of the adapter in the Windows NT registry.

Full or half duplex options can be set manually by using the MEDIA Keyword.

To set the MEDIA keyword add the value MEDIA to the registry in the subkey:

\\HKEY_IOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\El90x?\MEDIA keyword

The value for the MEDIA keyword should be one of the following:

MEDIA	10HALF	<-- 10 Mbps with half duplex
MEDIA	10FULL	<-- 10 Mbps with full duplex
MEDIA	AUTO	<-- Driver performs auto configuration
MEDIA	NotPresent	<-- use settings on EPROM

The default is NotPresent.

Windows for Workgroups

You need the WFW software to complete installation. To install the driver for a PC running Windows for Workgroups, follow these steps:

1 After installing the 3C900 NIC and cabling it to the network (see Chapter 2), turn on the PC and run Windows for Workgroups.

2 In the Network group, choose the *Network Setup* icon.

3 In the Network Setup dialog box, choose *Drivers*.

4 In the Network Drivers dialog box, choose *Add Adapter*.

5 Select *Unlisted Or Updated Network Adapter* and click *OK*.

6 Insert the *EtherDisk* diskette in drive A. Type the following in the Install Driver dialog box prompt and click *OK*:

```
a:\wfw311
```

Make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

7 In the Network Drivers dialog box, select the *3Com EtherLink XL PCI Bus Master NIC* on the list and click *OK*.

The Windows setup programs asks if you want to replace the Enhanced Mode Protocol manager with the version you are installing.

8 Click *Yes* to all prompts.

The Windows setup programs asks for the NDIS.386 file.

9 Insert the Microsoft Windows for Workgroups 3.11 Disk 7 and click *OK*.

10 When prompted for the EL90X.386 driver, insert the 3Com *EtherDisk* diskette in the A drive.

Make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

11 Type the following path to load the NDIS 3 driver:

```
a:\ndis3\dos
```

12 Click *OK*.

The PROTOCOL.INI and SYSTEM.INI files have been modified. WFW saves the old versions with the extension .001, where the number is incremented every time a new PROTOCOL.INI or SYSTEM.INI file is generated.

13 When prompted, restart the PC.

The driver installation is complete.

Installing the NDIS 2.01 Driver

This section describes how to install the NDIS 2.01 network driver.

DOS or Windows 3.x Install

To install or update the NDIS 2.01 driver for a PC running *DOS* or *Windows 3.x*, proceed as follows:

1 Boot the PC under DOS.

2 Insert the appropriate *EtherDisk* diskette in drive A and at the DOS prompt, type:

```
a:\install [Enter]
```

Make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

If the 3Com license screen appears, type **Y** to accept the terms and conditions.

3 On the main menu screen, select *Driver Installation and Update* and press [Enter].

4 On the Network Drivers screen, select *NDIS Driver Installation and Information* and press [Enter].

5 On the NDIS Drivers screen, select *NDIS Drivers* and press [Enter].

6 On the Install NDIS Drivers screen, select *Install DOS NDIS 2.01 Driver* and press [Enter].

Follow the instructions on the screen that appear to complete the installation.

Windows for Workgroups

The following procedure describes how to install the real-mode NDIS2 (EL90X.DOS) driver under Windows for Workgroups (WFW). You need the WFW software to complete installation. Real-mode drivers are required by DOS applications.

1. Start Windows for Workgroups.
2. Open the Network group and double-click *Network Setup*.
3. To install the network NIC, click *Drivers*.
4. In the Network Drivers window, click *Add Adapter*.
5. From the list of NICs, select *Unlisted* or *Updated Network Adapter*.
6. Insert the *EtherDisk* diskette in drive A and type the path for the NDIS drivers. For example, type:

   `a:\wfw311`

   Make sure you have the appropriate 3C900 EtherDisk diskette. Refer to the roadmap.txt file on EtherDisk Diskette 1 to determine which diskette you should use.

7. Click *OK*.
8. On the Unlisted or Updated Network Adapter screen, select 3Com EtherLink XL PCI Bus Master NIC and click *OK*.
9. On the Network Drivers screen, click *Setup*.
10. To select the NDIS 2 real-mode driver, click the down arrow under Driver Type and select *Real Mode NDIS Driver*.
11. Click *OK*.

    The Network Setup screen lists the 3Com EtherLink XL PCI Bus Master NIC (3C900) (NDIS2) and the default protocol stacks.

    The Windows Setup asks if you want to replace the Enhanced Mode Protocol Manager with the version you are installing now.

12 Click *Yes* to all prompts.

The Windows setup program asks for the NDIS.386 file.

13 Insert Microsoft Windows for Workgroups 3.11 Disk 7 in the floppy disk drive and click *OK*.

14 When prompted for the driver, insert the 3Com *EtherDisk* diskette in the floppy disk drive.

Make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

15 To load the NDIS 2 driver, type this path:

```
a:\ndis2\dos
```

16 Click *OK*.

The PROTOCOL.INI and SYSTEM.INI files have been modified. WFW saves the old versions with the extension .001, where the number is incremented every time a new PROTOCOL.INI or SYSTEM.INI FILE is generated.

17 Click *OK*.

18 Restart your PC when prompted.

The driver installation is complete.

Windows 95

To install the NDIS 2 driver on a PC running Windows 95, follow these steps:

1 Install the 3C900 NIC and cable it to the network as described in Chapter 2.

2 Turn on the PC and start Windows 95.

A message appears, informing you that Windows 95 is detecting new hardware and is looking for the drivers.

If you are installing this NIC for the first time, you are prompted to install the driver from a diskette provided by the hardware manufacturer.

3 Insert the 3Com *EtherDisk* diskette and click *OK*.

Make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

4 Specify the letter of the floppy drive location. For example, if your floppy drive is drive A, type:

```
a:\ [Enter]
```

5 Click *OK*.

Windows 95 reads in the W95EL90X.INF file.

6 Select the *3Com EtherLink XL PCI Bus Master NIC*.

7 Go to Network on the Control Panel, and double-click the *3Com Fast EtherLink XL 10/100MB Ethernet Adapter*.

8 In the Driver Type tab, click *Properties* and then *Real Mode (16 bit) NDIS Driver*.

9 Click *OK*.

10 When prompted, restart your PC.

The driver installation is complete.

OS/2

Before installing the NDIS network driver for OS/2, make sure you have the appropriate *EtherDisk* diskette and names of the protocols you need. In addition, Multi-Protocol Transport Services (MPTS) must be in the OS/2 peer group and LAN Connect must be installed.

To install the NDIS 2 driver on a PC running OS/2, follow these steps:

1. Install the 3C900 NIC and cable it to the network as described in Chapter 2.
2. Double-click MPTS.

   The Configure dialog box appears.
3. Click *Configure*.

   The LAPS configuration dialog box appears.
4. In the Current Configuration section, highlight all items.
5. Click *Remove*.

   All items are deleted.
6. Go up to the Network Adapters section.
7. Click *Other Adapters*.
8. Type:

   `a: [Enter]`
9. Insert the *EtherDisk* diskette in the floppy disk drive.

Make sure you have the appropriate 3C900 EtherDisk *diskette. Refer to the roadmap.txt file on* EtherDisk *Diskette 1 to determine which diskette you should use.*

   The LAPS Configuration dialog box appears again.
10. In the Network Adapters section, highlight 3Com Fast EtherLink/EtherLink XL Family OS/2.
11. Click *Add*.
12. In the Protocols Section, select IBM OS/2 NETBIOS and any other protocols that apply.

13 Click *OK*.

14 Close all open windows as they appear.

15 In the Update Configuration dialog box, click *Exit*.

16 Click *OK*.

17 Click *Exit*.

Reboot your PC to complete driver installation.

The driver installation is complete.

Banyan VINES, Microsoft LAN Manager, SCO UNIX, IBM LAN Server, Artisoft LANtastic, DEC PATHWORKS

Text files that contain driver installation instructions are provided on the *EtherDisk* diskettes for the other NDIS 2 network operating systems, including:

- Banyan VINES client and server
- Microsoft LAN Manager
- SCO UNIX
- IBM LAN Server
- Artisoft LANtastic
- DEC PATHWORKS

Use a text editor or word processor to display and print the text files for installing the NDIS 2 network driver for these networks.

5 TROUBLESHOOTING

This chapter provides the following troubleshooting information:

- Checking the 3C900 NIC LED
- Running the diagnostics programs to test the 3C900 NIC
- Troubleshooting tips

The 3Com World Wide Web site offers the latest drivers, troubleshooting information, and software updates in the Customer Support area. To access the Web site, enter the 3Com URL address into your Internet browser:

`http://www.3Com.com/`

LEDs

Before the LED can be used for troubleshooting, the NIC must be cabled to the network (see Chapter 2) and the network drivers must be installed (see Chapter 3 for NetWare drivers or Chapter 4 for NDIS drivers).

The 3C900 NIC has an LED that indicates whether the connection between the NIC and hub is active. Figure 2-1 and Figure 2-2 show the NIC LEDs.

When you first install the NIC and power up the computer, the LED illuminates, but does not blink. For the link beat to be active (enabled), the network driver must be installed.

If you are experiencing problems and the computer is connected to a hub, make sure your hub complies with the 10BASE-T specifications, then check the LED as follows:

- If the LED is on, the link beat is working.
- If the LED is off, the link beat has not been established or there is a problem with the connection between the NIC and the hub.

3Com Diagnostics Programs

The two diagnostic programs on the *EtherDisk* diskette check the NIC's overall operation and isolate faults. You can run the diagnostics tests after installing an NIC or you can run them when a fault is suspected. Diagnostics are included for both Windows 95, Windows NT, and DOS environments.

3Com NIC Diagnostics Program

Use the 3Com NIC diagnostics program for Windows 95 and Windows NT to test the 3C900 NIC and change configuration information. Release Notes for the 3C900 NIC can be displayed using the 3Com NIC Diagnostics program.

The 3Com NIC Diagnostics program is automatically installed with the Windows 95 and Windows NT driver as described in Chapter 3 and Chapter 4. If the 3Com NIC Diagnostics is not on your PC, copy it from the EtherDisk 1 *diskette.*

Running the NIC Self-Test

Run the NIC self-test to check the physical components, connectors, and circuitry on the NIC.

1. Install the 3C900 NIC and cable it to the network as described in Chapter 2.
2. Start the 3Com NIC Diagnostics program:

For Windows 95:

a Click the *Windows Start* menu.

b Click *Run*.

c Type **3NICDIAG**.

For Windows NT:

a In the \WINNT system 32 directory, double click the 3Com NIC Diagnostics executable.

The 3Com NIC Diagnostics program main screen appears as shown in Figure 5-1.

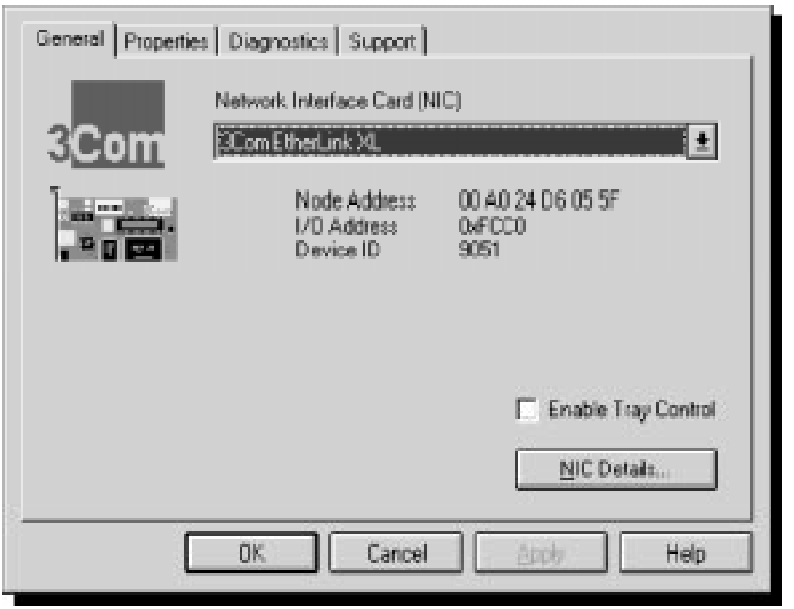


Figure 5-1 3Com NIC Diagnostics Program Main Screen

To display the 3Com logo on your Windows 95 task bar for future easy access to the 3Com NIC Diagnostics program, click the box next to Enable Tray Control.

3 Click the Diagnostics tab to display the diagnostics screen shown in Figure 5-2.

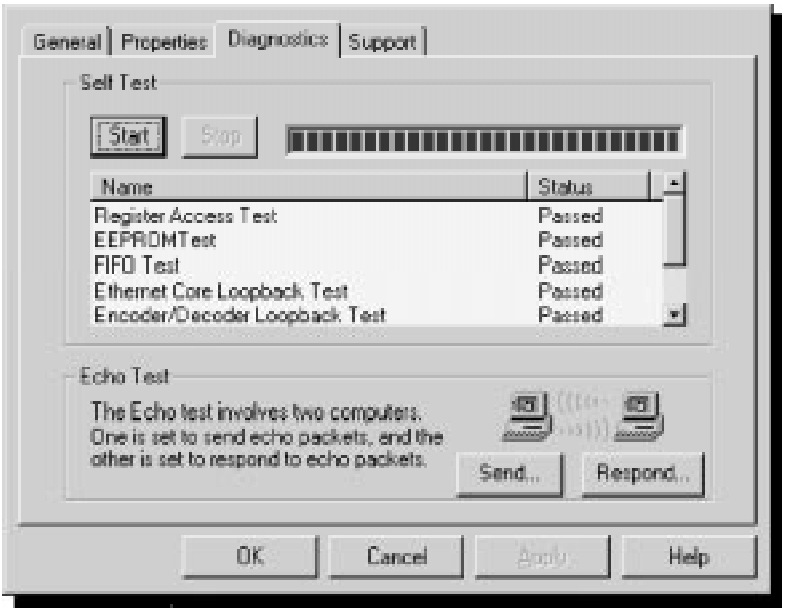


Figure 5-2 Diagnostics Screen

4 Click Start in the Self Test section.

The following tests run in sequence:

- Register Access
- EEPROM
- FIFO
- Ethernet Core Loopback
- Encoder/Decoder Loopback
- Interrupt

Click *Help* to display definitions of each test and what to do if the test fails. You can click *Stop* to stop the tests. Otherwise, the tests run continuously to completion.

Running the Echo Test

The echo test tests the 3C900 NIC's ability to transmit and receive data while on the network.

You need two PCs with 3COM NICs installed to run an echo test: one PC to send data and one PC to receive data. See Table 5-1 for a list of supported NICs.

CAUTION: *Running the echo test while connected to an active network can cause intermittent failures. To avoid this, connect to an inactive network on which only the PC being tested is operating.*

To run the echo test, follow these steps:

1. Install the 3C900 NIC and cable it to the network as described in Chapter 2.

2. Install a 3C900 NIC in another PC, install the network driver, and run the 3Com NIC Diagnostics program as described earlier in this manual.

   This second PC is called the echo server or sending PC. Make sure it has the same PC operating system as the first PC.

3. On both PCs:

   For Windows 95:

   a. Click the *Windows Start* menu.

   b. Click *Run*.

   c. Type **`3NICDIAG`**.

   For Windows NT:

   a. In the \WINNT system 32 directory, double click the 3Com NIC Diagnostics executable.

   The 3Com NIC Diagnostics program main screen appears on both PCs, as shown in Figure 5-2.

4. From the Diagnostics screen (Figure 5-2) on your PC, click *Send* and *Start* on the Echo Test window.

5 From the Diagnostics screen (Figure 5-2) on the sending PC, click *Respond*.

The Echo Test Responder screen appears on the sending PC, as shown in Figure 5-3.

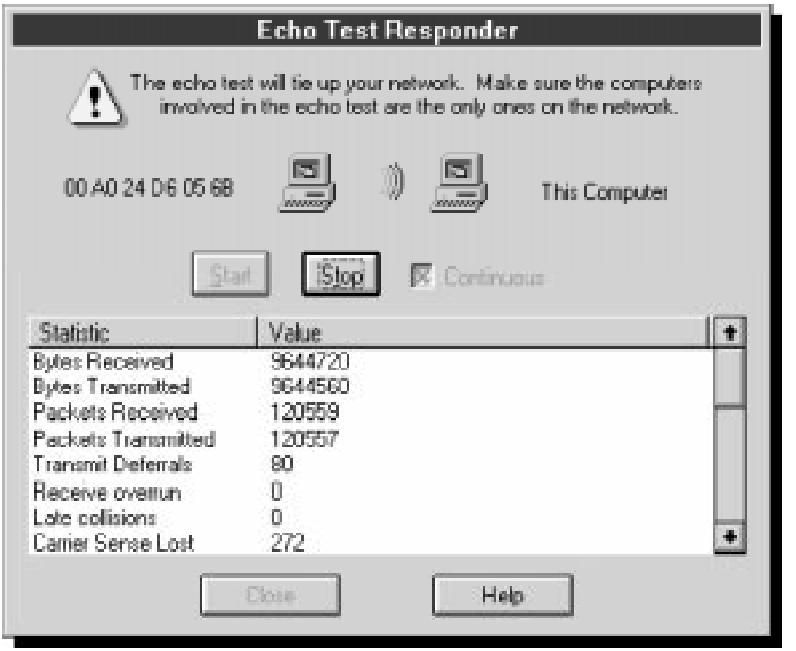


Figure 5-3 Echo Test Responder Screen

6 Click *Start*.

The statistics for the test appear in the statistics window, as shown in Figure 5-3. Click *Help* for statistics definitions.

For troubleshooting information, see the next section.

3Com Support Services

The support screen, shown in Figure 5-4, provides access to the following support services:

- 3Com NIC Diagnostics program
- 3C900 NIC Release Notes
- 3Com BBS Telephone Numbers and Modem Speeds
- 3Com World Wide Web information
- 3Com Problem Report Generator

1 To access the 3Com support screen, click the Support tab on the 3Com NIC Diagnostics program main screen, shown in Figure 5-2.

The support screen appears, shown in Figure 5-4.

Figure 5-4 3Com NIC Diagnostics Program Support Screen

- Click *Diagnostics* to run the 3Com NIC Diagnostics program. Refer to the beginning of this chapter for information on how to use the 3Com NIC Diagnostics program.
- Click *Release Notes* to display additional troubleshooting tips for the 3C900 NIC.
- Click *BBS Information* to display the BBS telephone numbers and modem speeds.
- *http...* displays the 3Com World Wide Web address.
- Click *Problem Report* to generate a 3Com problem report.

Generating a Problem Report

The problem report generator prompts you for the information that will help 3Com customer support solve your 3C900 NIC installation and configuration problems.

You can email the completed report to 3Com customer support and receive an email answer within 2 business days.

To generate a problem report, follow these steps:

1. Click *Problem Report* on the support screen shown in Figure 5-4.

   The main problem report screen appears, shown in Figure 5-5.

2. Review the screen text and click *Next* to begin the problem report.

   The Customer information screen appears, as shown in Figure 5-6.

3. Enter your company name, address, contact name(s), phone, and email address.

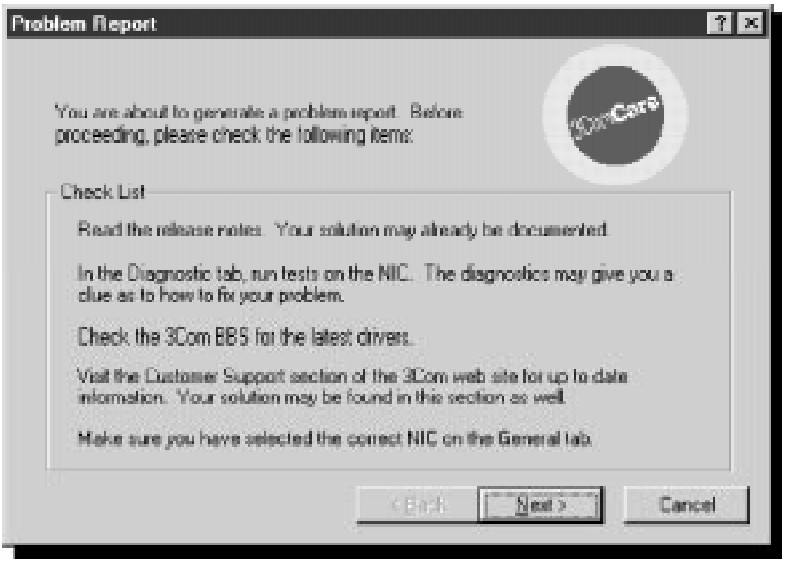

Problem Report
You are about to generate a problem report. Before proceeding, please check the following items:
Check List
Read the release notes. Your solution may already be documented.
In the Diagnostic tab, run tests on the NIC. The diagnostics may give you a clue as to how to fix your problem.
Check the 3Com BBS for the latest drivers.
Visit the Customer Support section of the 3Com web site for up to date information. Your solution may be found in this section as well.
Make sure you have selected the correct NIC on the General tab.
< Back
Next >
Cancel

Figure 5-5 Problem Report Main Screen

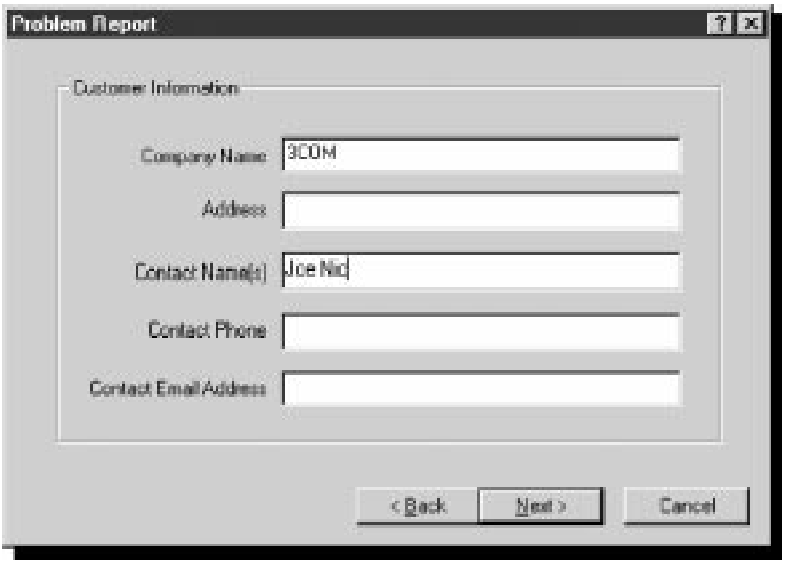


Figure 5-6 Customer Information Screen

4 Click Next to display the Computer information screen, shown in Figure 5-7.

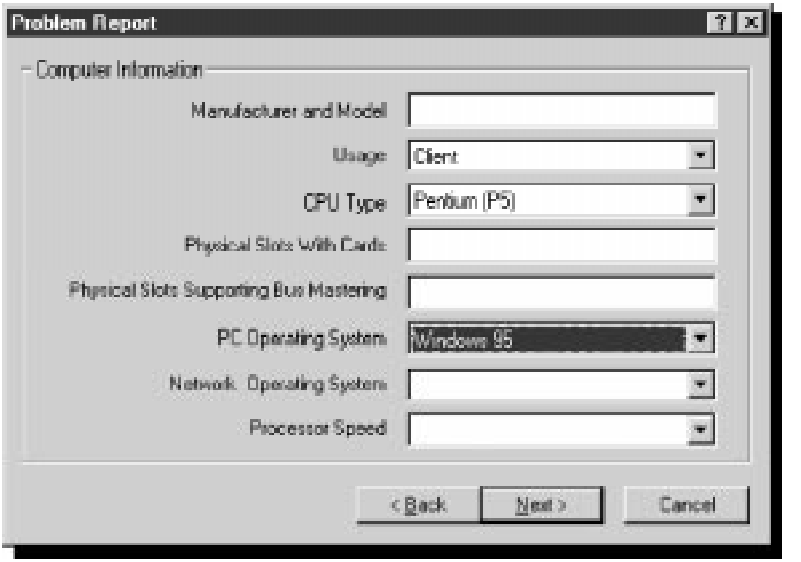


Figure 5-7 Computer Information Screen

Enter the following information to complete the form:

a PC manufacturer and model.

b Identify your PC as a client, server, or both, using the pull-down menu.

c Select your CPU type using the pull-down menu.

d Enter the numbers of the PC slots that have boards installed.

e Enter the numbers of the PC slots that support bus mastering.

f Select your PC operating system using the pull-down menu.

g Select your network operating system using the pull-down menu.

h Select your PC processor speed using the pull-down menu.

5 Click *Next* to display the Problem Description screen, shown in Figure 5-8.

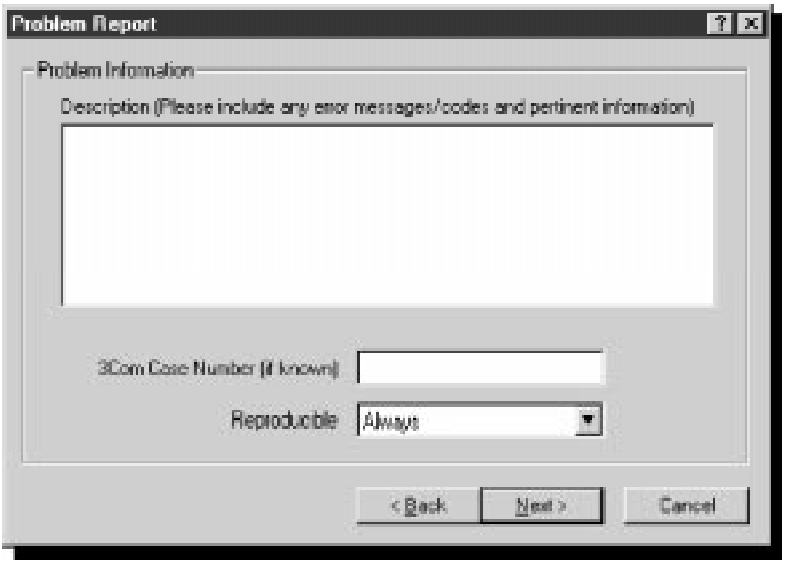


Figure 5-8 Problem Description Screen

6 Enter your problem description, the 3Com case number if you have one, and select if you can replicate it or not.

7 Click *Next* to display the Save screen, as shown in Figure 5-9.

Figure 5-9 Problem Report Save Screen

8 Click *Finish* to save the report to the c:\3report.txt file.

The send report screen appears. Use your mail application to mail the report to one of the addresses on the Send Report screen.

Contact your local reseller first.

The problem report is completed. To view the report, click *View Report*.

9 Click *OK*.

10 The 3Com NIC Diagnostics main screen appears.

To exit the program, click *Cancel*.

DOS Diagnostic Tests

The DOS diagnostic tests are divided into Group 1 and Group 3 tests. The Group 2 test does not apply to the 3C900 NIC.

The Group 1 tests check the physical components, connectors, and circuitry on the NIC.

The Group 3 test (Echo Exchange Test) tests the NIC's ability to transmit and receive data while on the network.

If the NIC passes both tests successfully, hardware failure is ruled out. If a problem still remains, look at cabling, software, and other issues that affect functionality on the network.

To run the tests, proceed as follows:

1. Check that the NIC is installed and connected to the network correctly (see Chapter 2).

2. Boot the PC under DOS.

The Configuration and Diagnostic Program will not run if memory managers or other device drivers have been loaded.

3. Insert the *EtherDisk* diskette in floppy disk drive A and type the following at the DOS prompt:

   ```
   a:\install [Enter]
   ```

4. On the main menu, select *Configuration and Diagnostic Program* and press [Enter].

5. Complete the instructions in the next section, "Running the Group 1 Tests."

Running the Group 1 Tests

1. Under the *Test* pull-down menu, select *Run Tests* and press [Enter].

   The Run dialog box appears. The *Start* button is selected.

2. Press [Enter] to start the tests.

   Group 1 tests run ten times unless you specify otherwise. The test results are displayed on the screen in the Results column.

   To run the tests continuously, go to the Repetitions box on the Test Setup screen, and select Continuous (and deselect Halt on Error in the Errors box).

   The Group 1 tests include:

- Register Access
- EEPROM
- FIFO Loopback
- Ethernet Core Loopback
- Encoder/Decoder Loopback
- Interrupt

   For test descriptions, see the on-line help (press [F1]).

3. When you are done testing, exit the Configuration and Diagnostic Program and reboot the PC.

Group 2 tests do not apply to this NIC.

Running the Group 3 Test

CAUTION: *Running the Group 3 test while connected to an active network can cause intermittent failures. To avoid this, connect to an inactive network on which only the PC being tested is operating.*

To run this test on the network, you need another PC set up as an echo server to receive packets from the NIC being tested and echo them back to the NIC.

The PC being used as an echo server must have a 3Com NIC *running at the same speed* (10 Mbps) as the 3Com 3C900 NIC.

Testing NIC Operation

To test NIC operation, use a PC as an echo server that contains an 3C900 NIC, an EtherLink III, or a Fast EtherLink XL NIC.

Select *Echo Server* under the *Test* menu and click the *Start* button to make the PC an echo server.

If you are setting up an echo server on a PC with a 10 Mbps 3Com NIC *other than* an 3C900 NIC, follow these steps:

1. Select a PC to use as an echo server.
2. Insert the appropriate *EtherDisk* diskette into the echo server PC's drive A.
3. On the echo server PC, change to drive A at the DOS prompt. Type the following to start the Configuration and Diagnostic Program:

   `3cxxx [Enter]`

   where the xxx is the diagnostic program name for a NIC in Table 5-1.

Table 5-1 NIC and Diagnostic Program Names

Diagnostic Program Name	Echo Server NIC
3C503	EtherLink II® or II TP EtherLink II/16 or II/16 TP
3C505	EtherLink Plus®
3C507	EtherLink 16 or EtherLink 16 TP
3C515	Fast EtherLink ISA
3C5X9CFG	EtherLink III family
3C59XCFG	Fast EtherLink or EtherLink III PCI/EISA
3C523	EtherLink/MC
3C523TP	EtherLink/MC TP
3C527	EtherLink/MC 32
3C90XCFG	Fast EtherLink XL or EtherLink XL PCI

4 From the main menu, select *Echo Server Setup*.

The program notifies you that your PC is now set up as an echo server.

Changing the Test Setup

To change the test setup, follow these steps:

1 Choose *Test Setup* from the *Test* menu in the main window of the Configuration and Diagnostic Program, or the *Test Setup* button in the Run Tests dialog box.

2 Press [Tab] to select any Test Setup dialog box field.

3 To change a setting in a field, follow these steps:

a In the Group Select box, use the arrow keys to select a test group.

b In the Group X Tests box, use the arrow keys to select a test. Press the [Space Bar] to enable or disable an individual test.

c In the Repetitions box, specify the number of times you want to run the tests, or use the arrow keys to select the *Continuous* option.

d In the Errors box, press the [Space Bar] to select or deselect the *Halt on Error* parameter.

4 Select *OK*, press [Enter], and select *Run Tests* from the *Test* menu. Select the *Start* button to run the tests.

Getting Help If a Test Fails

If any DOS diagnostic test fails, you can get additional information as follows:

- Select the test that failed in the *Run Tests* dialog box and press [Enter].
- Select the *Zoom* button and press [Enter].

If a test fails, the NIC may not be defective. The problem may be incorrect option settings, option settings that conflict with the settings of other boards, or improper installation.

Troubleshooting Tips

If you need to test the NIC further, use the following troubleshooting tips:

CAUTION: *Before inserting or removing the NIC from the PC, turn the PC's power off.*

- Check the NIC installation by reviewing Chapter 2. Make sure the board is seated correctly in the slot. Check for specific hardware problems, such as broken traces or loose/broken solder connections.
- Inspect all cables and connections. Check the length and rating of the UTP cable connection. Make sure the cable segment is compliant with 10BASE-T recommendations. Maximum length for all types of UTP cabling for this NIC is 100 meters.
- Try inserting the NIC in another slot. The original slot in which the NIC sits may be defective.
- Make sure you are running the latest BIOS for your PC.

- Replace the failed NIC with a working NIC and run the diagnostic tests again, using the same option settings as those used on the failed NIC. If the working NIC passes all tests, the original NIC is probably defective. For information on product repair, see Appendix B.
- Install the NIC in another functioning PC and run the tests again. The first PC you used for testing may be defective if the NIC passes the tests in this PC.
- Remove all other NICs from the PC and run the tests again. If the tests pass, the other NICs may be causing contention.
- Check the configuration settings and change them if they conflict with another device. See Chapter 6.
- Before you run any DOS tests, make sure that you booted your PC under DOS, and that no device drivers or memory managers were loaded before you ran the diagnostic tests.
- If you are running the Group 3 DOS test, make sure that the NIC is connected to a properly cabled and inactive network and that an echo server is set up on the network.

Accessing the 3Com World Wide Web Page

The 3Com web site features news and information about 3Com products, customer service and support, 3Com's latest drivers, technical information, selected articles from 3TECH™, 3Com's award-winning technical journal, and more.

To access the 3Com's World Wide Web site, enter the 3Com URL into your Internet browser:

`http://www.3Com.com`

The Customer Support section has more troubleshooting tips for 3Com NICs.

6 CHANGING CONFIGURATION SETTINGS

This chapter describes how to display and change configuration settings for the 3C900 NIC. Use the 3Com diagnostics programs to display and change the 3C900 NIC configuration settings.

Before you change the settings, contact your system administrator.

Configuration Settings

Table 6-1 lists each configuration option, the default setting, and the available settings.

Table 6-1 Option Settings

Option	Default Setting	**Available Settings**
Network Driver Optimization	Normal	Minimize CPU Utilization, Maximize Network Performance, Normal
Full Duplex	Auto Select	Enabled, Disabled, Auto Select
Boot PROM	Disabled	Disabled, 8 K, 16 K, 32 K
Media Type	On board Tp for 3C900-TPO, Auto Select for 3C900-COMBO	TP, AUI, coax, Auto Select
PACE	Disabled	Enabled, Disabled

CAUTION: *Before setting the 3C900 NIC for full duplex, make sure the switch port is also set to full duplex.*

Full duplex allows a NIC and a switch to transmit data simultaneously - operating at a theoretical 20 Mbps providing greater throughput.

You can use either the 3Com NIC Diagnostics program or the DOS Configuration program to display and change configuration settings.

Displaying Configuration Information

If you are running Windows 95 or Windows NT, use the 3Com NIC Diagnostics program to display and change configuration information.

The 3Com NIC Diagnostics program is automatically installed with the Windows 95 and Windows NT drivers as described in chapters 3 and 4. If the 3Com NIC Diagnostics is not on your PC, copy it from the EtherDisk 1 *diskette.*

To display the current configuration of the 3C900 NIC using the 3Com NIC Diagnostics program, follow these steps:

1. Install the 3C900 NIC and cable it to the network as described in Chapter 2.

2. Start the 3Com NIC Diagnostics program:

   For Windows 95:

   a. Click the *Windows Start* menu.

   b. Click *Run*.

   c. Type **`3nicdiag`**.

   For Windows NT:

   a. In the \WINNT system 32 directory, double click the 3Com NIC Diagnostics executable.

   The 3Com NIC Diagnostics program main screen appears as shown in Figure 6-1.

   To display the 3Com logo on your Windows 95 task bar for future easy access to the 3Com NIC Diagnostics program, click the box next to Enable Tray Control.

3. Click *NIC Details* to display the NIC Details screen shown in Figure 6-2.

   Each configuration setting is displayed with the current status. Use the scroll bar to display the full list.

   To display definitions for these values, click *Help*.

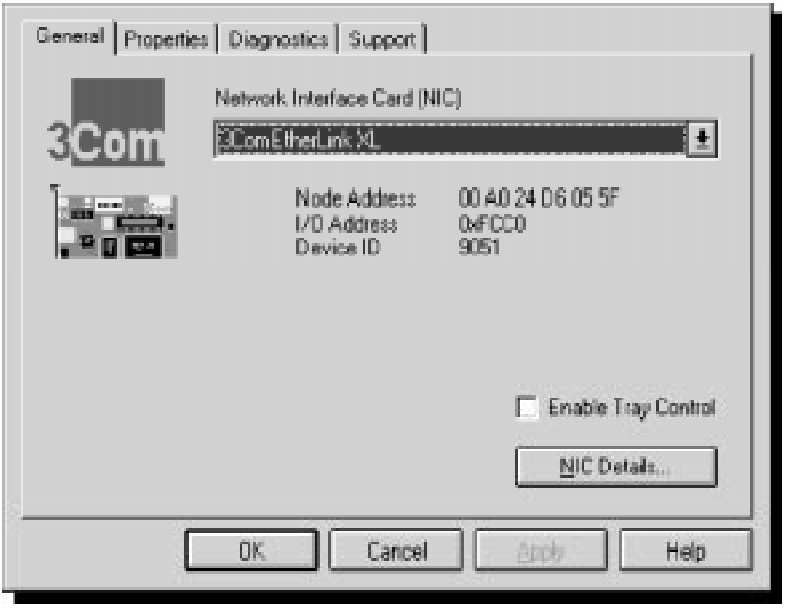


Figure 6-1 3Com NIC Diagnostics Program Main Screen

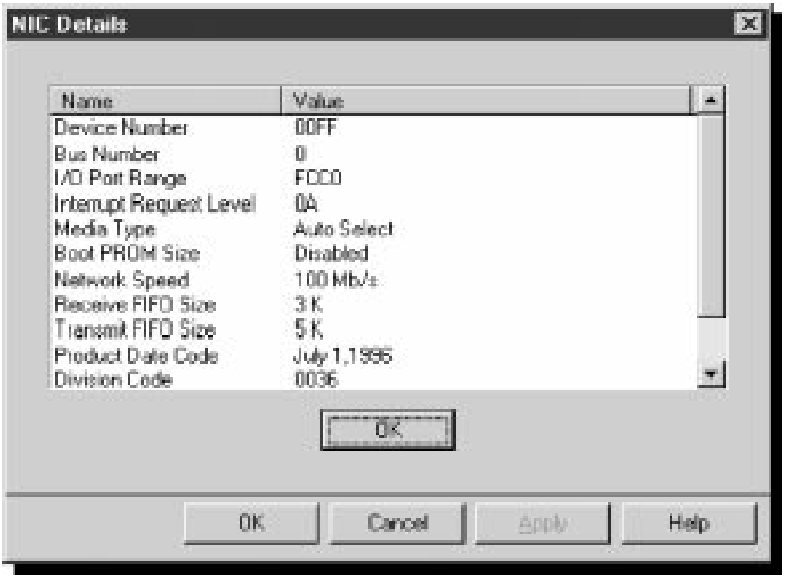


Figure 6-2 NIC Details Screen

Changing Configuration Settings

To change the 3C900 configuration settings with the 3Com NIC Diagnostics program, follow these steps:

1 Click the Properties tab on the 3Com NIC Diagnostics main screen, shown in Figure 6-1.

The Properties screen appears, as shown in Figure 6-3.

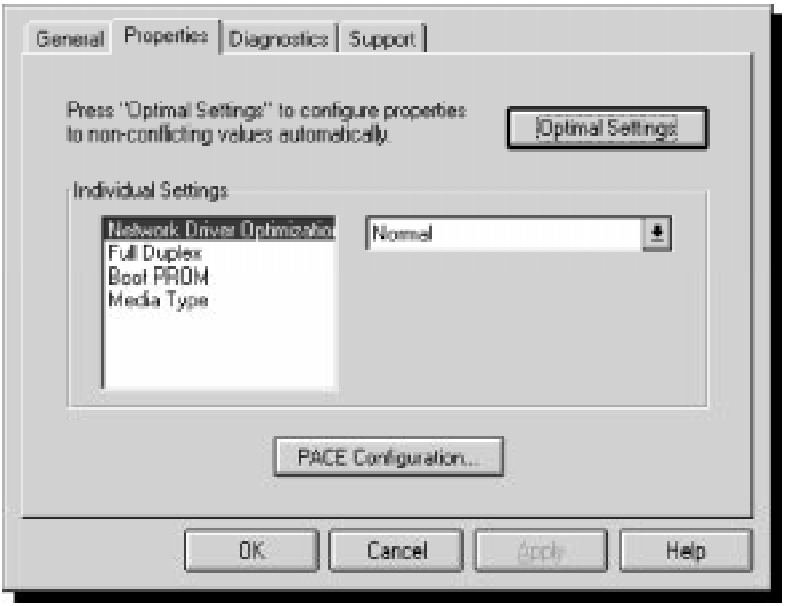


Figure 6-3 3Com NIC Diagnostics Properties Screen

2 To display the options for each setting, highlight the setting and scroll through the options on the right pulldown menu.

For definitions of these properties, press *Help*.

3 To select a new value, highlight the value and release the mouse button.

4 Click *OK*.

The new value is selected.

Repeat the process to change any configuration setting on the Properties screen.

Click *OK* or *Cancel* to exit the screen.

Changing PACE Configuration

PACE offers the ability to prioritize multimedia and real-time data. You must have the 3C900 NIC, a PACE-enabled switch (such as the LinkBuilder 1000), and the PACE-compliant application installed. This feature is operational only with a PACE-enabled switch such as the LinkBuilder 1000.

PACE prioritization increases the efficiency of bandwidth utilization and allows data and time-sensitive voice, video or data to share the same physical network infrastructure.

Selecting PACE Applications

To select PACE applications, follow these steps:

1 On the Properties screen, shown in Figure 6-3, click PACE Configuration.

The PACE Applications screen appears, as shown in Figure 6-4.

For the PACE driver to recognize high priority network traffic, it must know if a stream of network traffic was generated by a given application.

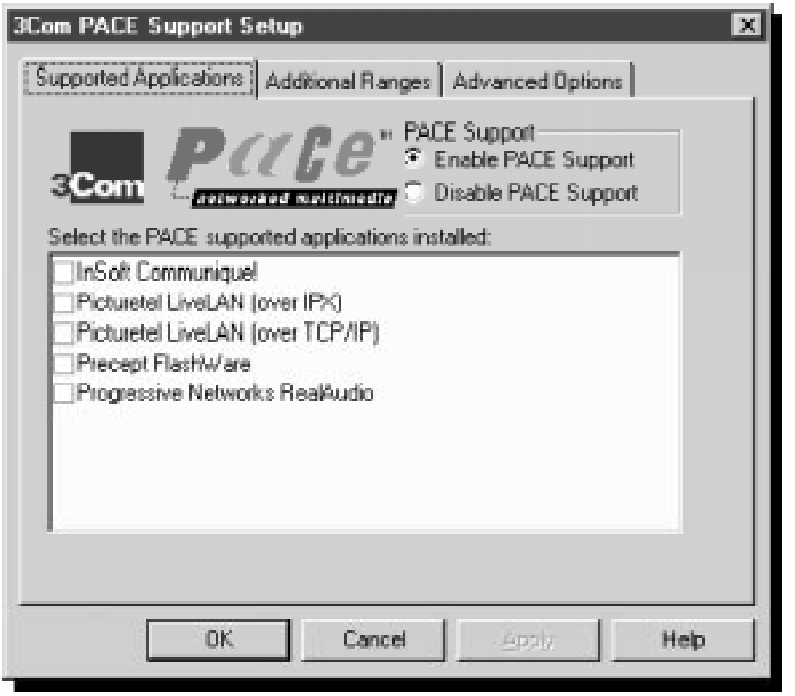


Figure 6-4 PACE Applications Screen

2 To enable PACE support for an application, click the box next to the appropriate application name.

If an application is not listed here, you may obtain information from the applications manufacturer and manually enter the information in the Additional Ranges tab.

3 Click *OK*.

Changing PACE Ranges and Protocols

You can add information for PACE applications that you want to prioritize and are not listed on the PACE Applications screen.

You must specify port or socket ranges as well as the network protocol being used. Obtain the information from the application manufacturer. The PACE network driver uses these ranges to determine whether a packet should be treated as high priority.

1 To add the PACE ranges and protocols, click the Additional Ranges tab.

The PACE Additional Ranges screen appears, as shown in Figure 6-5.

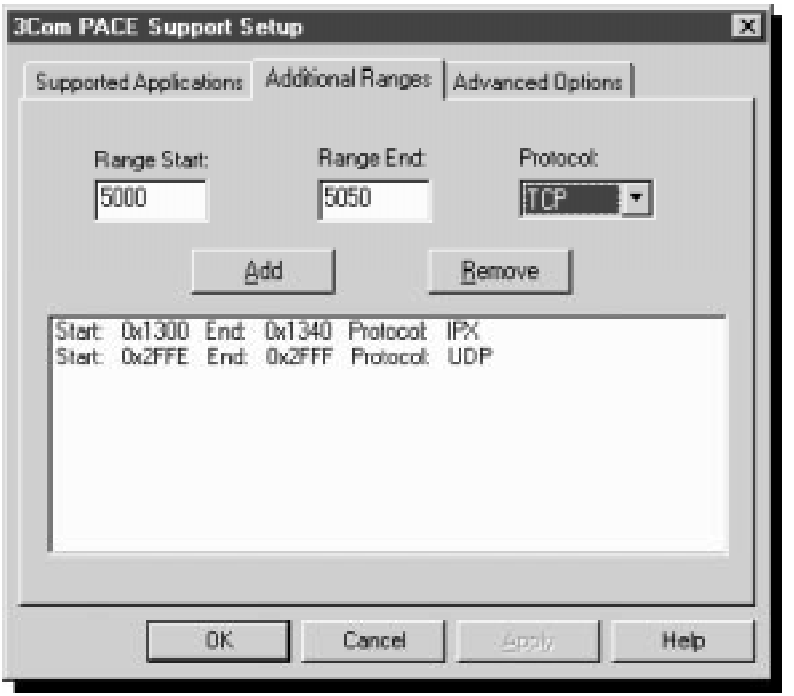


Figure 6-5 PACE Additional Ranges Screen

2 Enter the beginning of the port or socket range for the application in the range start box.

The range start should be a 4 digit hexadecimal value.

3 Enter the inclusive range end value of the port or socket range for the application.

The range end should be a 4 digit hexadecimal number. If only one port or socket is needed, Range End should match Range Start.

4 Enter the protocol that the application uses.

This can be TCP, UDP, or IPX. Some applications support multiple protocols and have port or socket ranges for each protocol. In this case, the range/protocol must match the protocol on the PC.

For example, if only TCP/IP is installed, do not enter the socket range for IPX as it will adversely affect driver performance.

5 Once the Range Start, Range End, and Protocol are entered press *Add*.

The range is added to the list, as shown in Figure 6-5.

To remove a range, highlight the range in the list and click *Remove*.

PACE Advanced Options

PACE Advanced Options are used to fine tune how the network driver handles certain types of PACE traffic. In general, these values need not be altered. Contact your network administrator before using these options.

1 To display the PACE Advanced Options screen click the Advanced options tab.

The PACE Advanced Options screen appears, shown in Figure 6-6.

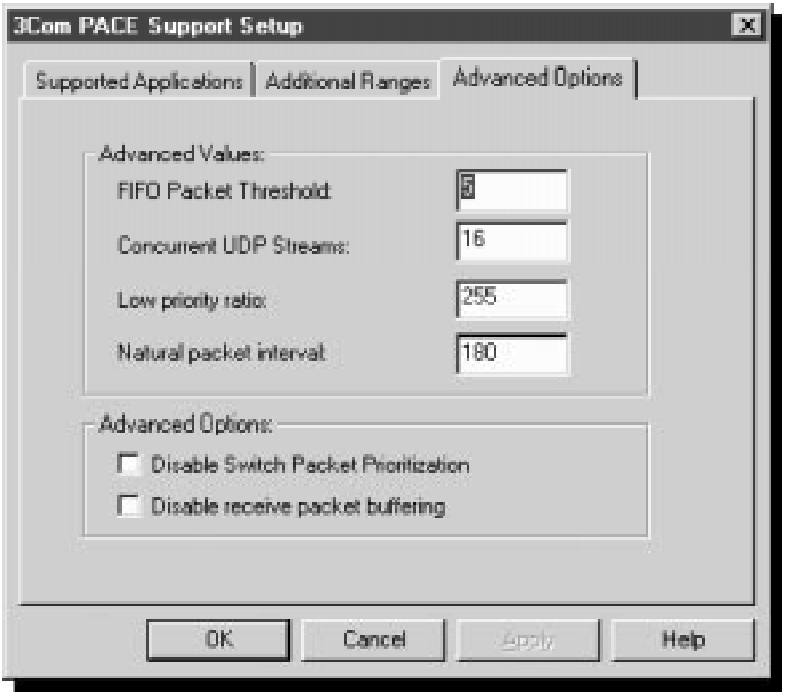


Figure 6-6 PACE Advanced Options Screen

2 Enter new information as required.

3 Click *OK* to set the new value.

PACE Settings Descriptions

FIFO Packet Threshold. FIFO packet threshold is the number of non-PACE packets the network driver will allow in the FIFO ahead of any PACE packets. A smaller number will decrease the time in between PACE packets, but could adversely affect performance. A value of 3 is recommended

Concurrent UDP Streams. Concurrent UDP streams control the number of simultaneous multimedia UDP packet streams the network driver can handle at any given time. For many applications, the number of UDP streams is the same as the number of connections.

For example, for video conferencing with three people, applications use three UDP streams for the video data. The value must be a power of two (2, 4, 8) but the optimal value may vary depending on the PC and application.

A video server may support 32 connections but a client may only want to conference with 4 other people at a time.

A value of 16 is recommended for most applications.

Low Priority Ratio. When PACE support is enabled, high-priority packets are always transmitted before low-priority packets. If a certain high-priority applications sends out enough packets, no low-priority packets may get sent.

To prevent this problem, the driver uses a ratio value to periodically send out a low-priority packet (if one is waiting to be sent.)

For example, if a value of 1000 is entered, one low-priority packet would be sent for every 1000 high-priority packets. A value of 25 is recommended for most applications.

Natural Packet Interval. To communicate packet priority to the interconnect devices (repeaters, switches, etc.), the PACE driver will slightly modify the Ethernet packet.

When these modified packets are sent out for large intervals without any low-priority packets being sent, interconnect devices can become confused which may result in connection problems.

For this reason, the driver can be configured to send out an unaltered, natural packet periodically. The value given is in seconds.

A value of 180 seconds (3 minutes) is recommended for most applications.

Disable Switch Priority Communication. Disable switch priority communication disables modification of Ethernet packets used for prioritization of multimedia traffic within 3Com switch products.

If a multimedia connection cannot be made between a PACE-enabled workstation and a non-PACE workstation, disabling the switch prioritization can sometimes alleviate this problem.

Disabling switch prioritization only affects the switch, it does not change the behavior of the PACE driver in any way. Packets deemed to be high priority will still be transmitted ahead of most non-PACE packets on the workstation.

Using the DOS Configuration Program

To change the software option settings, follow these steps:

1. Make sure the 3C900 NIC is installed and connected to the network as described in Chapter 2.

2. Boot the PC under DOS.

   The Configuration and Diagnostic Program will not run if memory managers or other device drivers have been loaded.

3. Insert the *EtherDisk* diskette in drive A and type the following at the DOS prompt:

   ```
   a:\install [Enter]
   ```

4. When the Select an Adapter screen appears, select the 3C900 NIC and press [Enter].

   If *one* NIC is installed, the *Configure Adapter* option appears selected on the *Install* pull-down menu. Press [Enter].

   If *two* NIC are installed, select the NIC on the menu. Press [Enter].

   A screen appears, showing the parameters for the selected NIC.

5 Press [Tab] to select the main dialog box. Use the arrow keys to select a parameter option and press [Enter].

A second dialog box appears.

6 Use the arrow keys to scroll through the list of settings (see Table 6-1 for default values and possible values) for that option. Select a setting and press [Enter].

7 Continue this procedure with any of the other options.

See the on-line help for more information about each setting (press [F1] when the option is selected).

8 Press [Tab] to select OK and press [Enter].

This saves your changes. If you want to use the same settings on other 3C900 NICs, you can save the configuration settings to a file. Select *Save* under File Options in the Adapter Configuration dialog box. For example, type:

```
d:\config\3C900.set [Enter]
```

This saves the settings to the default file 3C900.SET in the CONFIG directory on drive D. See the on-line help (press [F1]) for more information.

When all changes are complete, exit the program.

A SPECIFICATIONS AND CABLING REQUIREMENTS

This appendix lists the specifications (Table A-1), cable requirements, and connector pin assignments for the 3C900 NIC.

Table A-1 3C900 NIC Specifications

Network Interface	
3C900-TPO	Ethernet IEEE 802.3i 10BASE-T for a 10 Mbps baseband CSMA/CD local area network
3C900-COMBO	IEEE 802.3i 10BASE-T and Ethernet IEEE 802.3 for a 10 Mbps CSMA/CD local area network
Physical Dimensions	
3C900-TPO Length:	12.4 cm (4.88 in)
3C900-TPO Width:	7.6 cm (3.00 in)
3C900-COMBO Length:	17.5 cm (6.88 in)
3C900-COMBO Width:	10.2 cm (4.00 in)
Environmental Operating Range	
Operating temperature:	0˚ to 70˚ C (32˚ to 158˚ F)
Humidity:	10 to 90% noncondensing
Power Requirements	
Operating voltage:	+5 V ± 12 V
3C900-TPO	+5 V @ 250 mA (maximum)
3C900-COMBO	+12 V @ 400 mA and +5 V @ 250 mA (maximum)

Cabling Requirements

You must use good quality cables when connecting to the NIC to comply with the limits of a Class B digital device. Cable changes not approved by 3Com could void your authority to operate the equipment. Examples of cable types that you may use are as follows:

- For unshielded twisted-pair (UTP) connections (100 ohm):
  - Level 3 LAN and high-speed data cable, for example Anixter® CM-00424BAG-3 or equivalent
  - Level 4 extended distance LAN cable, for example Anixter CM-00424BAG-4 or equivalent
  - Level 5 data grade media cable, for example AT&T® type 2061, 1061, or equivalent
- For thin coax connections: RG58 A/U or C/U (50 ohm ± 4)
- For thick coax connections: RG59 B/U (50 ohm)

AUI Connector Pin Assignments

Table A-2 lists the pin assignments for the AUI (attachment unit interface) connector.

Table A-2 AUI Connector Pin Assignments

Pin	Function	Pin	Function
1	Collision shield	9	Collision –
2	Collision +	10	Transmit –
3	Transmit +	11	Transmit shield
4	Receive shield	12	Receive –
5	Receive +	13	+12 volts
6	Power return	14	Voltage shield
7	Not used	15	Not used
8	Not used		

RJ-45 Connector Pin Assignments

Figure A-1shows the RJ-45 connector pin assignments.

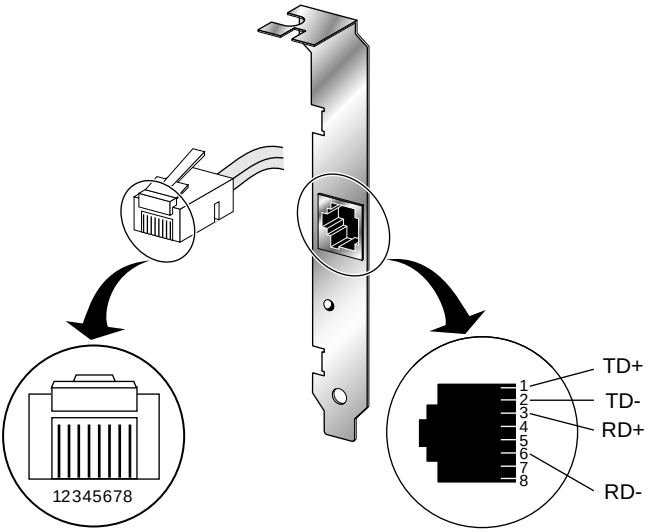
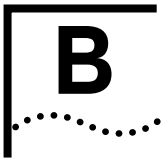


Figure A-1 RJ-45 Connector Pin Assignments



TECHNICAL SUPPORT

3Com provides easy access to technical support information through the variety of services described in this appendix.

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- 3Com Bulletin Board Service (3ComBBS)
- World Wide Web site
- 3ComForum on CompuServe®
- 3ComFacts℠ automated fax service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available via modem or ISDN, 24 hours a day, 7 days a week.

Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit.

Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	(61) (2) 9955 2073
Brazil	up to 14400 bps	(55) (11) 547 9666
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 28800 bps	(49) (89) 627 32 188
Hong Kong	up to 14400 bps	(852) 2537 5608
Italy (fee required)	up to 14400 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Mexico	up to 28800 bps	(52) (5) 520 7835
P. R. of China	up to 14400 bps	(86) (10) 684 92351
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5840
U.K.	up to 28800 bps	(44) (1442) 278278
U.S.A.	up to 28800 bps	(1) (408) 980 8204

Access by Digital Modem

ISDN users can dial-in to 3ComBBS using a digital modem for fast access up to 56 Kbps. To access 3ComBBS using ISDN, use the following number:

(408) 654 2703

World Wide Web Site

Access the latest networking information on 3Com Corporation's World Wide Web site by entering our URL into your Internet browser:

`http://www.3Com.com/`

This service features news and information about 3Com products, customer service and support, 3Com Corporation's latest news releases, selected articles from 3TECH™ (3Com Corporation's award-winning technical journal) and more.

3ComForum on CompuServe

3ComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as a messaging section for peer support. To use 3ComForum, you need a CompuServe account.

To use 3ComForum:

1. Log on to CompuServe.
2. Enter **`go threecom`**.
3. Press [Return] to see the 3ComForum main menu.

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, 7 days a week.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Telephone Number
U.K.	(44) (1442) 278279
U.S.A.	(1) (408) 727 7021

Local numbers are available within the following countries:

Country	Telephone Number	Country	Telephone Number
Australia	800 123853	Netherlands	06 0228049
Belgium	0800 71279	Norway	800 11062
Denmark	800 17319	Portugal	0505 442607
Finland	98 001 4444	Russia (Moscow only)	956 0815
France	05 90 81 58	Spain	900 964445
Germany	0130 8180 63	Sweden	020 792954
Italy	1678 99085	U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are outside the U.S.A. and Canada, contact your local 3Com sales office to find your authorized service provider. Use one of these numbers:

Country	Telephone Number
Australia*	1800 678 515
Belgium*	0800 71429
Brazil	(55) (11) 546 0869
Canada	(905) 882 9964
Denmark*	800 17309
Finland*	0800 113153
France*	05 917959
Germany*	0130 821502
Hong Kong	(852) 868 9111
Ireland*	1 800 553117
Italy*	1678 79489
South Africa	(27) (11) 803 7404

Country	Telephone Number
Japan	(81) (3) 33457251
Mexico	(525) 531 0591
Netherlands*	06 0227788
Norway*	800 11376
Singapore	(65) 538 9368
Spain*	900 983125
Sweden*	020 795482
Taiwan	(886) (2) 577 4352
United Arab Emirates	(971) (4) 349049
U.K.*	0800 966197

* These numbers are toll-free.

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. Products sent to 3Com without RMA numbers will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S.A. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	31 30 60 29900, option 5	(44) (1442) 275822
Outside Europe, U.S.A., and Canada	(1) (408) 492 1790	(1) (408) 764 7290

GLOSSARY

10BASE-T

The IEEE 802.3 standard for a 10 Mbps baseband network on twisted-pair cable.

AutoLink

Auto-installation and auto-configuration software for NetWare DOS clients. It automatically configures the NIC by selecting the correct interrupt level and I/O base address, checking for the network connection, and detecting the correct frame type.

Distributed dRMON

The 3C900 NIC collects remote management information on command and provides network management information for both switched and Fast Ethernet networks.

Dynamic Access

Dynamic Access features set that optimizes network performance. Advanced Dynamic Access features include: PACE Interactive Access technology, dRMON support, Efficient Multicast Control, and PACE real-time and multimedia application support.

MAC

Media access control. MAC is the transport protocol that transfers data onto the cable. CSMA/CD is a MAC protocol that determines how nodes on the network share access to the cable.

NDIS

Network Driver Interface Specification. Defines the network driver architecture and interfaces that let a PC support network NICs. This architecture provides a standardized way to write drivers for network NICs.

NetWare

A series of network operating systems and related products made by Novell, Inc.

Network Interface Card

Network interface card (NIC). Formerly called adapter.

NIC

Network interface card. Formerly called adapter.

ODI driver

Open Data-Link Interface. A MAC-level specification developed by Novell and Apple®. Drivers complying with this specification can work with NetWare 2.x, 3.x, and 4.x. Like NDIS, ODI drivers support multiple protocols and NICs, and can be unloaded from memory to conserve conventional DOS RAM space.

PACE technology

3Com's PACE technology enhances both real-time, interactive applications and multimedia (data, voice and video) applications by optimizing network bandwidth utilization, reducing latency, controlling jitter, and supporting multiple traffic priority levels.

Parallel Tasking

3Com's third-generation Ethernet NIC architecture. Parallel Tasking technology accelerates data transfer by processing data packets simultaneously instead of sequentially.

PCI

Peripheral Component Interconnect. An advanced high-performance local bus that supports multiple peripheral devices. At 33 MHz, the PCI bus transfers 32 bits of data at up to 132 Mbps.

STP

Shielded twisted-pair cable. Twisted-pair cabling with an overall shield to prevent the entry of outside interference, and individually shielded and twisted pairs to prevent crosstalk.

Twisted-pair

Wiring similar to that found in the telephone system, consisting of two insulated wires loosely twisted around each other to help cancel out induced noise in balanced circuits.

UTP

Unshielded twisted-pair cable. Twisted-pair cabling that does not have individual or overall shielding. The cable contains two or more pairs of twisted copper wires.

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HARDWARE: 3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its Authorized Reseller:

Internetworking products	One year
Network adapters	Lifetime
Ethernet stackable hubs and unmanaged Ethernet fixed port repeaters	Lifetime* (One year if not registered)
*Power supply and fans in these stackable hubs and unmanaged repeaters	One year
Other hardware products	One year
Spare parts and spares kits	90 days

If a product does not operate as warranted during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com pursuant to any warranty.

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LIMITATION OF LIABILITY: IN NO EVENT, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE) SHALL 3COM BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE, LOSS OF BUSINESS, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS,EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow the exclusion of implied warranties or the limitation of incidental or consequential damages for consumer products, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights which may vary from state to state.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

FCC CLASS B CERTIFICATION STATEMENT

3Com Corporation
Model Nos: 3C900-TPO and 3C900-COMBO
FCC IDs: DF63C900-TPO and DF63C900-COMBO
Made in U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 this device may not cause harmful interference, and

2 this device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

The Interference Handbook

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

CISPR B COMPLIANCE

This device complies with the EMC directive of the European Community and meets or exceeds the following technical standard:

EN 55022 – Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.

This device complies with the CISPR Class B standard.

WARNING: This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

PLEASE CUT HERE

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Publication Title EtherLink XL PCI Network Interface Cards User Guide

Part No. 09-0888-005 Date Purchased _____

1 Please rate the quality of this publication in each of the following areas:

	Excellent	Good	Fair	Poor
Technical Accuracy Does the product work as the manual says it does?	_____	_____	_____	_____
Illustrations Are they clear and useful?	_____	_____	_____	_____
Are there enough of them?	_____	_____	_____	_____
Organization Is it easy to locate information?	_____	_____	_____	_____
Completeness Did you find all the information you needed?	_____	_____	_____	_____
Examples Are they helpful?	_____	_____	_____	_____
Are there enough of them?	_____	_____	_____	_____

2 How did you use this publication? (Check all that apply.)

Installation manual _____ Introduction to the subject _____ Self-study _____

Operating instructions _____ Reference training _____ Other _____

3 If you noticed any errors or omissions, please list them with their page numbers.

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